S. Hrg. 101–463

NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989

HEARING

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES,
TRANSPORTATION, AND INFRASTRUCTURE

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

S. 1007

A BILL TO AMEND TITLE 23, UNITED STATES CODE, REGARDING THE REDUCTION IN APPORTIONMENT FOR FEDERAL-AID HIGHWAY FUNDS TO CERTAIN STATES, AND FOR OTHER PURPOSES

OCTOBER 17, 1989

Printed for the use of the Committee on Environment and Public Works

U.S. GOVERNMENT PRINTING OFFICE
25–962 WASHINGTON : 1990

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

S321-14

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

QUENTIN N. BURDICK, North Dakota, *Chairman*

DANIEL PATRICK MOYNIHAN, New York
GEORGE J. MITCHELL, Maine
MAX BAUCUS, Montana
FRANK R. LAUTENBERG, New Jersey
JOHN B. BREAUX, Louisiana
HARRY REID, Nevada
BOB GRAHAM, Florida
JOSEPH I. LIEBERMAN, Connecticut

JOHN H. CHAFEE, Rhode Island
ALAN K. SIMPSON, Wyoming
STEVE SYMMS, Idaho
DAVE DURENBERGER, Minnesota
JOHN W. WARNER, Virginia
JAMES M. JEFFORDS, Vermont
GORDON J. HUMPHREY, New Hampshire

David M. Strauss, *Staff Director*
Robert F. Hurley, *Minority Staff Director*

Subcommittee on Water Resources, Transportation, and Infrastructure

DANIEL PATRICK MOYNIHAN, New York, *Chairman*

GEORGE J. MITCHELL, Maine
FRANK R. LAUTENBERG, New Jersey
JOHN B. BREAUX, Louisiana
HARRY REID, Nevada
BOB GRAHAM, Florida
JOSEPH I. LIEBERMAN, Connecticut

STEVE SYMMS, Idaho
JOHN W. WARNER, Virginia
JAMES M. JEFFORDS, Vermont
GORDON J. HUMPHREY, New Hampshire
DAVE DURENBERGER, Minnesota
JOHN H. CHAFEE, Rhode Island

CONTENTS

OPENING STATEMENTS

Page
Burdick, Hon. Quentin N., U.S. Senator from the State of North Dakota 8
Chaffee, Hon. John H., U.S. Senator from the State of Rhode Island 1
Durenberger, Hon. Dave, U.S. Senator from the State of Minnesota 71
Jeffords, Hon. James M., U.S. Senator from the State of Vermont 8
Moynihan, Hon. Daniel Patrick, U.S. Senator from the State of New York 1
Reid, Hon. Harry, U.S. Senator from the State of Nevada 5
Symms, Hon. Steve, U.S. Senator from the State of Idaho 76
Warner, Hon. John W., U.S. Senator from the Commonwealth of Virginia 3

WITNESSES

Anzinger, Robert K., chairman, Department of Emergency Medicine, Good Samaritan Hospital 14
    Written statement 107
Baker, Susan P., codirector, Johns Hopkins Injury Prevention Center 6
Campbell, B.J. director, Highway Research Center, University of North Carolina 12
Farabaugh, Michael Williams, chairman, Motorcycle Riders Foundation, Inc 87
    Written statement 236
Ford, Robert, chairman, Massachusetts Freedom First 69
    Written statement 179
    "What If Everything We Know About Highway Safety Is Wrong," a paper presented at the Transportation Research Forum 188
    Addendum to testimony 214
Hingson, Ralph, chief, Social and Behavioral Sciences Department, Boston University School of Public Health 67
    Written statement 165
    Repeal of the Massachusetts Seat Belt Law, from the American Journal of Public Health 174
Jones, Paul, representing the National Association of Governors' Highway Safety Representatives 101
    Written statement 266
O'Neill, Brian, president, Insurance Institute for Highway Safety 61
    Written statement 127
Ouellet, James V., Motorcycle Accident Research Project, University of Southern California 91
    Written statement 241
Rasor, Robert, vice president, government relations, American Motorcyclist Association 83
    Written statement 220
Spilman, Charles L., president, Traffic Safety Now, Inc 103
    Written statement 274
Valenziano, Carl P., director, trauma services, Bay State Medical Center 58
    Written statement 115
Viano, David C., president, the Association for the Advancement of Automotive Medicine 64
    Written statement 133
Waddell, Hon. Charles, chairman, Senate Transportation Committee, Virginia General Assembly, representing the National Conference of State Legislatures 98
    Written statement 258

ADDITIONAL MATERIAL

Page

S. 1007 280

Statements:
  Idaho, State of 77
  ABATE of North Dakota 288
  American Academy of Orthopaedic Surgeons 290
  American Insurance Association 296
  American Medical Association 304
  Bikers Against Manslaughter 311
  Brogoitti, Bob 312
  Connecticut Motorcycle Riders Association 313
  Freedom First in Iowa 318
  Geico Corp 320
  General Federation of Women's Clubs 323
  Goldstein, Jonathan 329
  Highway Users Federation 334
  Idaho Safety Restraint Coalition 78
  Jersey American Bikers Aimed To Educate 337
  Massachusetts Head Injury Association 341
  Motor Vehicle Manufacturers Association 344
  Motorcycle Industry Council 348
  Motorcycle Safety Foundation 353
    Letter to Senator Chafee 89
  Naiman, J 357
  National Association of Emergency Medical Technicians 359
  National Head Injury Foundation, Inc., Rhode Island Chapter 364
  National Association of Orthopaedic Nurses 366
  No Seat Belt Law For Adults 370
  Rhode Island Motorcycle Association 372
  Rhead, Cliff 373
  Trojan, Gregory M 380

"The Effect of Helmet Law Repeal on Motorcycle Fatalities," a report of the National Highway Traffic Safety Administration 21

NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989

TUESDAY, OCTOBER 17, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION,
AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room 406, Dirksen Senate Office Building, Hon. Daniel P. Moynihan (chairman of the subcommittee) presiding.

Present: Senators Moynihan, Chafee, Warner, Reid, Jeffords, and Durenberger.

OPENING STATEMENT OF HON. DANIEL PATRICK MOYNIHAN, U.S. SENATOR FROM THE STATE OF NEW YORK

Senator **MOYNIHAN**. I would like to extend a cordial good morning to our witnesses and to our guests at this hearing. This is a hearing of the Subcommittee on Water Resources, Transportation, and Infrastructure on the National Highway Fatality and Injury Reduction Act of 1989.

I would like to thank Senator Chafee for having brought a highway safety measure to our committee. It has been a long while since we have been able to inquire into these subjects. We do so indirectly with the speed limits, but not with respect to the specific measures that we have learned about in our country over the last quarter century regarding vehicle design and restraints that are basically injury minimizing.

On a point of personal privilege, I would just like to say that it is the first opportunity I have had in the Senate to acknowledge my debt to William O. Haddon, who was the first Director of the National Highway Traffic Safety Administration; and a doctor and scientist of great quality. We met in the administration of Governor Harriman in New York and were associated in these matters for many years.

I see that my distinguished colleague, Senator Chafee is here and I am sure he has an opening statement.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator **CHAFEE**. Mr. Chairman, first of all I want to thank you for scheduling this hearing at this prompt hour. I am sure you are cognizant of the fact that America was made great by men who got up early.

Senator **Moynihan**. I've just finally learned that late in life. If I had only known.

Senator **Chafee**. I am very pleased that we are having these hearings today on the National Highway Fatality and Injury Reduction Act of 1989. We have a full schedule and I will keep my comments brief. I am particularly gratified that you were the primary cosponsor of this piece of legislation. You have had a long and distinguished history in connection with highway safety issues. Indeed, I think you did the groundbreaking work on this particular subject back in the 1950's, and your leadership I want to acknowledge today.

One of the great problems that we are facing in our country is the constantly spiralling costs of medical care. We're spending—listen to these statistics—$500 billion a year on health care. That works out to $1.5 billion every single day of the year in attempting to provide decent hospital and medical care for our citizens. It is becoming increasingly clear that we're failing on a whole series of fronts. Medical costs are going up way above the inflation rate, something in excess of 10 percent a year. We've got enormous gaps in accessibility and coverage—37 million Americans have no health insurance whatsoever, and thus, to a great degree they are denied medical care. The difficulty of trying to assess how to carry the burden of medical costs is going to be a principle point of contention in labor-management relations in the balance of this year. That is what the NYNEX strike is all about. So, therefore, we've got to seize every opportunity no matter how small to prevent deaths and maiming accidents from occurring, not only for reasons of compassion but also to hold down health costs.

There is no more effective way to achieve this than by reducing the slaughter and the cruel injuries that are occurring on our highways. Nearly 50,000 Americans are killed every year on our highways and 4 million are injured. All too often we talk about the deaths and kind of brush aside the injuries, the people who are just maimed and suffer so because of these accidents. Every 10 minutes somebody in the United States of America dies on our highways, and every 10 seconds someone is injured. Motor vehicle crashes are the leading cause of death in the United States for men, women, and children between the ages of 1 and 44. Think of that. We talk about all the other illness and diseases—cancer, AIDS, strokes, or heart attacks—but motor vehicles are the leading cause of death.

The National Highway Safety Traffic Administration estimates that over the last 5 years nearly 20,000 lives have been saved by safety belts and motorcyclist helmets. Many more lives could have been saved if everybody had worn a helmet or had his or her belt on.

Just as important are the injuries that could significantly have been reduced. Many of those injured have no insurance. Others with serious injuries who need long-term care find their insurance benefits quickly exhausted. Hospitals have to absorb the additional cost where there is no insurance or in cases where they are reimbursed by public assistance funds, the reimbursement only covers a fraction of the costs. Medicaid clearly doesn't cover all the costs for hospitalizations. As a result, many hospitals are forced—and I see this in my State—for financial reasons to close their trauma centers and emergency rooms.

I suspect we are going to hear today, Mr. Chairman, opposition to this legislation based on at least two grounds: First, that these are matters that should be left to the individual States; and secondly, that somehow we are trampling on the rights of personal freedom. The answer to these points is several fold. Trauma centers are frequently regional, serving several States. These centers must care for the unhelmeted and unbelted victims from States outside of the State where the trauma center is located. Thus, these trauma centers are saddled with all the costs attendant to avoidable accidents even though the State where the center is located has the requisite laws. Likewise, where so often the case is that there is no insurance carried by the victim, it is the Federal Treasury, through Medicaid, that must pay a major portion of the bill.

Let me just give you a couple of examples. In our State hospital in Rhode Island, we are currently caring for five individuals who are now comatose from head injuries suffered while riding a motorcycle without a helmet. The cost to our State is $300 a day—that is a $109,000 a year per patient. One of these patients has been in that institution in this condition for 16 years at a cost to our citizens, and all the citizens of the country, of $1.750 million. That is for one motorcyclist who refused to wear a helmet when he was riding his motorcycle. So prevention is the answer. Safety belts and helmets are an effective preventative measure and the Federal Government has the right and the obligation to provide the leadership in making sure these measures are implemented. We know that safety belts and helmets work. We know laws dramatically increase the usage of these. We know they reduce the injuries. I hope we can get on with this legislation.

Thank you very much, Mr. Chairman.

Senator MOYNIHAN. Could I just say to Senator Chafee in that respect that it is the Federal Government which first developed the restraining devices we call seat belts and basically muffling devices we call helmets in aviation safety. In aviation design from the beginning—because the airplane seemed a more dangerous environment than an automobile, it is not, it just seems it—they developed restraining devices and helmets. So we have been at this from the beginning. We're not taking over or intruding, in my view.

Senator Warner, good morning, sir.

OPENING STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE COMMONWEALTH OF VIRGINIA

Senator WARNER. Good morning, Mr. Chairman. Thank you very much. I would like to introduce my entire statement.

[Senator Warner's statement follows:]

OPENING STATEMENT OF HON. JOHN W. WARNER, U.S. SENATOR FROM THE COMMONWEALTH OF VIRGINIA

Mr. Chairman, the number of highway fatalities each year in America is a national tragedy. Over 47,000 people were killed on America's highways in 1988. 1,071 of these fatalities were in my own state of Virginia. These grim statistics are especially tragic because many of these fatalities could have been prevented by the use of safety belts or motorcycle helmets.

This tragedy is national in scope, and I commend Senators Moynihan and Chafee for introducing legislation to address this important issue.

The Federal Government has a vital interest in this issue. The societal costs—not only monetary—associated with highway fatalities and injuries reach beyond the individuals and States involved. The loss touches family members, communities, our health care and insurance systems, and ultimately the taxpayer. Congress and the President should take steps to encourage states to enact laws to promote highway safety and reduce fatalities. The evidence clearly demonstrates that safety belts and motorcycle helmets save lives and reduce the severity of injuries.

Mr. Chairman, I find myself in an awkward position. My own State of Virginia is on of the States that already has legislation that meets the mandates of this bill. Indeed, Virginia would receive $683,636 dollars in incentive payments the first year. Believe me, it always hurts this Senator to turn down money for the Commonwealth.

But, I am troubled by the mechanism employed to secure State compliance with the Federal standards set forth in this legislation. This bill would withhold 5 percent of highway construction funds from States that do not have adequate laws in place in three years and 10 percent from those States which fail to comply in four years.

Our national transportation system is in bad shape and States are hard pressed to find sufficient revenues to address pressing urban, rural, and infrastructure problems. States depend on the allocation of Highway Trust Fund monies to address all of the pressing transportation needs within the Federal-Aid Highway Program.

As salutary as the goal of this legislation may be, withholding five and ten percent of all Federal-Aid Highway Funds from a state to secure compliance with this legislation is a heavy application of the Federal hammer.

This is not to say that I am unalterably opposed to this legislation. If the legislation were to address the correlation between costs incurred by the Federal government and a State's failure to enact adequate safety belt or motorcycle helmet laws, I believe that the means of the legislation would correspond to the ends sought. I welcome the comments of the witnesses as to how this legislation might be tailored to encourage States to enact these laws while making the penalty for failure to do so correspond to the Federal interest involved.

I want to take this opportunity to welcome all the witnesses, particularly Senator Charles Waddell of Virginia. Senator Waddell is the Chairman of the Transportation Committee in the Virginia Senate. Senator Waddell is a strong advocate of transportation safety and was the sponsor of legislation in Virginia to require the use of safety belts. We are privileged that he is appearing today to testify for the National Conference of State Legislators.

Senator WARNER. I was hoping to introduce Senator Charles Waddell of Virginia, but I do not see him here as yet.

Senator MOYNIHAN. I think he will be later in the morning, if I'm not mistaken.

Senator WARNER. I will not be able to be in attendance. He's a very distinguished member of our State legislature and he is the chairman of the Virginia State Senate Transportation Committee.

I would like to make one observation here, Mr. Chairman. Our State, I am proud to say, has met both the mandates or the goals of this legislation. We stand to benefit over $600,000 should this legislation pass. I must tell you that I am troubled by the mechanism employed to secure State compliance with the standards set forth in this legislation. This bill would withhold 5 percent of Highway Construction Funds from States that do not have adequate laws in place in 3 years, and 10 percent for those States which fail to comply in 4 years.

As you well know, Mr. Chairman, you and our distinguished ranking member here, Mr. Chafee, as members of this committee, our highway systems are in terrible shape and, indeed, the shortage of funds contributes to the safety of our highways. In other words, we're removing funds from States at the same time the States are unable to provide for the necessary improvements to their bridge structures, their highways systems to improve safety. So while I am generally supportive of the legislation, I at this moment want to proceed with some caution as we use this mechanism to fund.

I thank the Chairman.

Senator MOYNIHAN. We thank you.

Senator Reid, good morning.

OPENING STATEMENT OF HON. HARRY REID, U.S. SENATOR FROM THE STATE OF NEVADA

Senator REID. Senator Moynihan, I am sorry that I am not going to be able to stay to for this hearing. In 15 minutes, I have to testify on one of your favorite subjects a matter of transportation systems before the Commerce Committee; and then another hearing on the House side later.

I am very interested in the subject matter of this hearing. There are people in Nevada interested in this subject. We have a helmet law in the State of Nevada. There are people here who, as Senator Chafee has indicated, will direct their attention as to whether or not the Federal Government has a right to preempt in this area. I will be watching and listening to that very closely and I would hope that witnesses would direct themselves to that subject matter, that being: whether the Federal Government should be involved or whether we should leave this to the States?

Senator MOYNIHAN. That is a fair question, and that is what we are here for. Why don't we get on with our morning. We have a most distinguished panel to begin with. Professor Susan Baker is the codirector of the Johns Hopkins Injury Prevention Center; Dr. Campbell is director of the Highway Safety Research Center, University of North Carolina; Dr. Robert Anzinger is chairman of the Department of Emergency Medicine at Good Samaritan Hospital in Illinois; and Dr. Carl Valenziano is director of the Trauma Services at the Bay State Medical Center in Massachusetts. And in the order that the names are listed, we will first welcome Dr. Susan Baker, who is a distinguished research scientist in this field at the Johns Hopkins School of Public Health.

This gives me an opportunity to make a short statement which is that it is the schools of public health that have changed the health of this country and throughout the country. Bill Haddon came out of the Harvard School of Public Health, of course, and it was this epidemiological construct that really affects masses of populations and has taught us to think about this. We have learned, for example, to not use the word accident—nothing accidental about this trauma—it is a perfectly predictable aspect of certain modes of transportation. Mr. Chafee observed that trauma of this kind are the largest cause of death between the ages of 1 and 44. That is a measure of industrialization. When I first began it was between ages 1 and 35. So that just marks how good we have become with viral diseases and such like that this kind of trauma becomes more salient. Perhaps the best index of how industrialized the country is at what age this kind of trauma ceases to be the largest single cause of death. Finally, I would like to say that we have begun to develop a profession in this field. Thirty years ago when "accidents" were the largest single cause of death from ages 1 to 35, there probably had never been at one time two medical doctors working full time in this field. Curiously, these things take a long while to attract competence. They have now done so and we have a very competent group ahead of us.

Doctor Baker, good morning.

STATEMENT OF SUSAN P. BAKER, CODIRECTOR, JOHNS HOPKINS INJURY PREVENTION CENTER, JOHNS HOPKINS UNIVERSITY SCHOOL OF PUBLIC HEALTH

Ms. **Baker**. Mr. Chairman and members of the committee, thank you very much for this chance to speak with you about this very important bill.

I am Susan Baker, codirector of the Injury Prevention Center at the Johns Hopkins School of Public Health, where I am professor of health policy and management. I am testifying on behalf of the American Public Health Association and the 50,000 health professionals that it represents. Also, as a member of the board of directors of Advocates for Highway and Auto Safety, I wish to offer my testimony on their behalf.

The mission of the Johns Hopkins Injury Prevention Center is to reduce the immense burden of injury that currently is borne by the people of the United States. Injuries are the number one killer and crippler of children and young adults. They rob us of more pre-retirement years of life than cancer and heart disease combined.

The cost of injury has recently been calculated and reported in this 1989 report to Congress, which I believe was just delivered to Congress yesterday. This was prepared by the Institute for Health and Aging of the University of California, San Francisco, and the Johns Hopkins Injury Prevention Center. This brand new report, produced by the National Highway Traffic Safety Administration and the Centers for Disease Control, reveals that the total cost of all injuries is almost $157 billion each year.

The report encompasses injuries from all sources, not just highway-related injuries. But it also shows the enormous cost of motor vehicle-related injury, per se. Every year, almost 5.5 million injuries are caused by motor vehicles. Motor vehicles are the second leading reason for injury hospitalization and the leading cause of injury death. In 1985, they were the source of some 523,000 hospital admissions and 46,000 deaths. That number of deaths has not changed substantially since 1985, so these figures are still quite current.

Motor vehicle-related injuries make up 31 percent of all injury costs. The actual lifetime cost of all motor vehicle injuries that were sustained in 1985 was $48.7 billion, substantially greater than for any other category of injury. This means that for every man, woman, and child in this country, the average cost of motor vehicle-related injury is $200 each year, or almost $15,000 per person over the average lifespan. This is not for each injured person, but for every person in the United States.

The largest part of the cost of motor vehicle-related injury—about three-fourths, or $36.5 billion each year—is the cost of injury to motor vehicle occupants. Injuries to motorcyclists represent another $3.5 billion. Viewed against this backdrop of staggering injury costs, the costs of well-enforced safety belt laws and motorcycle helmets at relatively small.

In estimating the savings that would be achieved by such laws, I would like to use the most conservative figures I could find, because even they are staggering. At present, seat belt laws have not been implemented for 20 percent of the United States population. If they were implemented in the remaining States, they could be expected to reduce deaths and injuries of front seat occupants by at least a conservative 7 percent, preventing 325 deaths and more than 37,000 injuries. They would thereby save more than $342 million each year in direct and indirect costs.

Motorcycle helmet use laws have been shown by several studies to reduce deaths by 24 to 30 percent. That makes them one of the most effective injury prevention measures that we have ever devised in this country. Using the more conservative figure of 24 percent, the Cost of Injury Report estimates that the enactment of laws requiring helmet use by all motorcyclists in States presently without such laws would prevent 651 deaths and 1,953 head injuries each year, at an annual cost reduction of $393 million. When the cost of purchasing helmets is subtracted, the net savings in the first year are estimated at least $97 million, with much greater reductions in later years when fewer helmets would have to be purchased.

Most of my testimony has been in terms of millions or billions of dollars and seems to ignore the fact that pain and anguish associated with these deaths and injuries goes far beyond any possible accounting system. But let's think of those other costs. The injured who die are deprived of a full life. The survivors, in addition to their physical suffering, may lose their independence, their employability, the capacity to think and create and socialize. Families and friends mourn and share the suffering and bear the enormous burdens of all types.

My testimony thus far has also ignored the question of who pays the bills for the injuries. In one way or another we all do, through our medical and life insurance, car insurance, and tax dollars. About 19 percent of all motor vehicle injury costs for treatment and rehabilitation are paid by Medicare and Medicaid. And a staggering 63 percent of the cost of motorcyclist injuries in a major trauma center were paid by taxpayers. Based on these figures, our taxes pay more than $9 billion each year toward the cost of injured motor vehicle occupants and motorcyclists.

Senator Moynihan, three decades ago you and Doctor William Haddon, who was my friend and mentor and colleague, began to plead for better data on injuries. Today we have details not only on the numbers and types and sources of injuries, both and fatal and nonfatal, but also on their costs. I hope that these data will be helpful to the Congress as it considers this excellent bill.

Much of the opposition to S. 1007 will be based on the issue of individual freedom, ignoring the fact that freedom from injury should be recognized as one of our most precious freedoms. Thomas Jefferson, in his first inaugural address, spoke of government "which shall restrain men from injuring one another." Today, in many States, we injure one another through policies of not requiring our citizens to take reasonable steps toward protecting themselves.

Mr. Chairman and members of the committee, I strongly urge that you support S. 1007, and thereby move us one giant step toward freedom from injury.

Thank you.

Senator MOYNIHAN. We thank you, Professor Baker. As is our practice, we will go right through our panel. But first, Senator Jeffords has joined us. We welcome you, Senator. Would you like to make an opening statement?

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

Senator JEFFORDS. I have an opening statement I would just as soon put in the record, Mr. Chairman.

Senator MOYNIHAN. Fine. We'll do that.

[Senator Jeffords' statement follows:]

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

"The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people."

This, in its entirety, is the tenth amendment to the Constitution, ratified on September 25, 1789, as part of the Bill of Rights. I believe it speaks for itself.

I have no doubt but that the authors of S. 1007 are well intentioned. There are very few issues that my distinguished fellow New Englander, Senator Chafee, and I do not agree on. This is one of them. This issue is not just about seat belts and motorcycle helmets. Everyone on this committee supports their use and knows they save lives. There is much more at issue here.

S. 1007 is about federalism. It violates the spirit of the Constitution and once again puts the federal government in the position of dictator.

I'm not so naive as to pretend that the tenth amendment means anything any more. Through a broad interpretation of the Commerce Clause, which has been upheld by the Supreme Court, Congress has the power to impose its will upon the states on just about any issue we can imagine. We should use this power judiciously.

Proponents of S. 1007 cite our experience with the National Minimum Drinking Age to illustrate the effectiveness of the sanctions approach. They are correct; sanctions are effective, as all 50 States have complied with the Federal mandate and raised their drinking ages. However, just because a law is effective, it is not necessarily a good law. I opposed sanctions then, and I oppose them now.

Congress does not endear itself to state and local governments, nor to our citizens, when it adopts the attitude that "Washington knows best."

Let's leave this issue up to the states and concentrate on the important Federal issues facing the Nation.

Senator MOYNIHAN. Also, if I may, Senator Burdick has a statement which we will enter into the record.

[Senator Burdick's statement with attachments, follow:]

STATEMENT OF HON. QUENTIN N. BURDICK, U.S. SENATOR FROM THE STATE OF NORTH DAKOTA

Today, the Subcommittee on Water Resources, Transportation, and Infrastructure is holding a hearing on mandatory seat belt and motorcycle helmet legislation. S. 1007 was introduced by the ranking minority member of the Committee on Environment and Public Works, Senator Chafee, and it is co-sponsored by Senator Wilson and subcommittee chairman, Senator Moynihan.

It is appropriate to applaud the leadership State officials have already shown in addressing a wide range of highway safety issues, partricularly in recent years. In fact, a total of 34 States and the District of Columbia have passed mandatory seat belt laws. Eighty-five percent of our population is now covered by belt laws. Motorcycle helmet laws are in effect in 47 States, with 22 States and the District of Columbia—or 56 percent of the population—covered by universal helmet laws.

States are developing increasingly comprehensive and effective traffic safety programs. Many grass roots groups, officials at all levels of government, law enforcement officers, automobile and insurance industry groups, consumer activities, and safety experts have joined together to make our highways safer. Governors and State legislators are actively considering and enacting seat belt and helmet laws. And the use of helments and belts is steadily rising.

I support initiatives to encourage increased use of motorcycle helmets and seat belts—and indeed other measures to bring about highway safety improvements. But I am deeply concerned about using highway funding sanctions as the mechanism to force State compliance with a burgeoning number of Federal requirements. Especially when rapid progress is being made at the State level, as with helmets and seat belts.

In fact, safety itself can be compromised if highway apportionments are withheld from States. These funds are provided by highway users for construction and repair work that it turn makes roads and bridges safer. The condition of our crumbling transportation infrastructure is a major national concern and certainly a major responsibility of the Environment and Public Works Committee. Highway safety will continue to be an integral part of the highway program and of new highway legislation.

As chairman of this committee, I want to also recognize the Commerce, Science, and Transportation Committee's interest in highway safety legislation. Although highway safety issues overlap between the two committees, the Environment and Public Works Committee's focus has been on highway safety as it relates to the design and construction of highways while the emphasis in the Commerce Committee has been on motor vehicles and driver behavior. The Environment and Public Works Committee has jurisdiction over the Federal Highway Administration, and the Commerce Committee oversees the National Highway Traffic Safety Administration. Historically, highway safety legislation has been referred to the Environment and Public Works Committee when it contains sanctions—the withholding of funds paid by highway users into the Highway Trust Fund.

At the same time as funding for transportation infrastructure grows more scarce, the construction and repair needs around the country are mounting. One way to stretch our limited resources is to focus closely on improvements in coordinating and targeting existing transportation spending. To that end, I intend to develop legislation to reorganize the delivery of programs by the U.S. Department of Transportation with the aim of emphasizing the intermodal, interconnected nature of transportation. In my view, creation of a surface transportation administration with the ability to coordinate highway, highway safety, transit, and rail programs will lead to better management and delivery of Federal assistance as well as associated cost savings at all levels of government.

The Congress must move beyond the time when one transportation mode or initiative is pitted against another; we must take a comprehensive approach to addressing our transportation needs; we must make hard decisions about our transportation priorities; we must spend our highway user fees and other transportation dollars as wisely as possible; and we must renew and strengthen the Federal-State partnership that has worked so well in delivering the Federal-aid highway program.

As part of the hearing record, I ask that a list of the current highway penalties as prepared by the Federal Highway Administration be included. Among the orgnaizations that have registered concerns about the use of highway sanctions and about the effect they may have on the role of State government in the Federal system are: the National Governors' Association, the National Association of Governors' Highway Safety Representatives, the U.S. Conference of Mayors, the National Conference of State Legislatures, the National Association of Counties, the American Association of State Highway and Transportation Officials, and the Advisory Commission on Intergovernmental Relations.

STATEMENTS OF NATIONAL ORGANIZATIONS REGARDING SANCTIONS

National Governors' Association, Policy Positions 1989-90:

From Clean Air Act sanctions and speed limit compliance levers to minimum drinking age provisions, congressional reliance on the withholding of highway funds to secure actions in the states is counter to effective highway policy.

The Governors recommend that the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) administer the highway safety program in a unified manner as a single program. The two agencies

should move toward a programmed approach in the use of highway safety funds to achieve greater flexibility in administering the highway safety program. Federal aid requirements should be simplified, and the states should be permitted to focus federal highway safety resources on their most pressing problems.

National Association of Governors' Highway Safety Representatives (NAGHSR), Resolution on Federal Occupant Protection Initiative, September, 1989:

Be it further resolved that NAGHSR strongly urges Senator Chafee to delete the sanctions from S. 1007 so that states are encouraged to pass occupant protection and helmet use legislation but are not penalized for failing to do so.

National Conference of State Legislatures, Transportation and Communications Committee, 1989:

The use of federal-aid highway funds as a sanctioning device to enforce federal non-transportation goals is an anathema to states. Federal-aid highway funds should be disbursed or withheld based solely on a state's compliance with criteria applicable to the federal-aid highway program. Any criteria mandated by law must be adequately funded. Any reduction in the federal match portion for a specific program should be accompanied by a reduction in mandates for that program.

National Association of Counties, The American County: 1989-1990 Platform & Resolutions:

Fiscal and Legislative Impact Policy—The national government must protect the integrity of its state and local government partners by establishing an expanded fiscal impact policy. This policy must inform state and local governments of all anticipated regulatory and fiscal impacts of proposed policies on state and local budgets.

Mandate reimbursement—The federal government must reimbuse local government for all costs associated with complying with mandates.

Advisory Commission on Intergovernmental Relations, Devolving Selected Federal-Aid Highway Programs and Revenue Bases: A Critical Appraisal, September 1987:

Accretion of Federal Mandates. In time, federal requirements and sanctions have accumulated, which have limited state and local governnments' flexibility in road construction and operation, have restricted these governments' ability to address specific transportation needs, and have probably increased the cost and time needed for road improvements.

Crossover sanctions, the second form of federal mandates, are not directly related to the activity that receives federal financial assistance. An instance is federal legislation that requires specified maximum speed limits on all roads—federally aided or not—as a condition for approval of any federal highway projects.

Crossover sanctions can easily be the most intrusive form of federal mandate because they threaten withdrawal of federal funds for state action not directly hurting the operation of the grant program. The debate over easing the 55 mph speed limit is a case in point. Those who supported retaining that limit argued that higher speed limits, set by state action, would be unsafe. But are not governors, state legislatures, and local officials responsive to safety concerns? Policing the highways is after all, a matter of state law and state and local patrols.

The federal restriction on state and local road choices occurs not solely because federal standards are high, but because they tend to be inflexible, inappropriate to circumstances that vary from place to place, and more responsive to national interest groups than to the users of specific highways.

American Association of State Highway and Transportation Officials AASHTO Transportation Policy Book—Policy Resolutions, February 1989

SANCTIONS AND PENALTIES WHICH IMPACT ON FEDERAL-AID HIGHWAY PROJECTS—(DECEMBER 6, 1987)

JCR1-87—Sanctions and penalties clearly impact on the overall spending level of federal-aid dollars for our national highway program. At the present time, no less than fourteen sanctions are being imposed on the Federal-Aid Highway program. An updated table of those penalties and their specific implications has been prepared and is attached.

Most sanctions and penalties have no relationship whatsoever to meeting current and future highway transportation needs. Under sanctions already enacted, states can have withheld or lose 100 percent of their federal-aid highway funds. Through specific monetary sanctions, withholding of project approval, court injunctions, and other actions or lack of action in accordance with federal laws, the entire Federal-Aid Highway program could be shut down.

Whereas, the United States Congress continues to impose a wide range of sanctions and penalties on the Federal-Aid Highway program most of which are not related to traffic safety nor transportation improvements; and

Whereas, the Clean Air Act includes a sanction where by an independent action by the EPA Administrator could withhold Highway Trust Fund monies on safety, rehabilitation and other highway projects not specifically related to air quality improvement:

Therefore Be It Resolved That, the AASHTO-AGC-ARTBA Joint Committee urges the 100th Congress to remove the cadre of sanctions and penalties on the Federal-aid highway program;

Be It Further Resolved That, the AASHTO-AGC-ARTBA Joint Committee urges that if Congress feels compelled to retain a special enforcement mechanism for any of the subjects where a sanction is now employed for enforcement, that compliance be sought through other enforcement mechanisms such as incentive programs that will not do damage to the operational capacity of the nation's highways or the provision of funding to assure their proper maintenance and safe operation, as implementation of the current sanctions would do;

Be It Further Resolved That, Congress in the consideration of new legislation avoid the use of such sanctions; and

Finally Be It Resolved That, in its consideration of Clean Air Act legislation, Congress be urged to avoid imposition of the sanctions applied to current clean air deadlines in those states where the states are now engaged in a good faith effort to meet those deadlines, and that with respect to future years no new sanctions be imposed or other actions taken that will unfairly penalize users of the nation's highways, or cause funding to be withheld that is necessary for maintaining the operational capabilities and safety of America's highway system.

CURRENT PENALTIES

1. Commercial Motor Vehicle Width Limitation; P.L. 97-424 (Section 416) as amended by P.L. 98-17.

Sets 102 inch width on Interstate and other designated highways.

Penalty—Injunctive relief.

2. Commercial Motor Vehicle Length Limitation; P.L. 97-424 (Section 411).

Sets 48 foot (single unit trailer) or 28 foot (double unit trailer) minimum allowable length limits on Interstate and other designated highways.

Prohibits States from establishing overall length limits.

No State may prohibit combinations consisting of two trailing units.

Penalty—Injunctive relief.

3. Vehicle Width Limitations; 23 U.S.C. 127.

States must permit a minimum and maximum of 20,000 pound single axle, 34,000 pound tandem axle, and 80,000 pound gross weight of combination (5-axle) vehicles to operate on the Interstate. Maximum weight cannot exceed allowable under bridge formula.

Penalty—Withholding of Interstate apportionments. If not restored during availability period, the apportionment lapses.

4. Enforcement of Vehicle Size and Weight; 23 U.S.C. 141.

Each State must certify that it is enforcing all State laws respecting maximum vehicle size and weight.

Penalty—Withholding of 10 percent of the apportionments for Interstate, Interstate 4R, Primary, secondary, and urban programs. Apportionments are restored if enforcement is shown to be acceptable within 1 year; otherwise, reapportioned to other States.

5. Registration—Proof of Heavy Vehicle Use Tax Payment; 23 U.S.C. 141.

States must require proof of payment of heavy vehicle use tax prior to registering heavy vehicles subject to the use tax.

Penalty—Withholding of up to 25 percent of the apportionments for the Interstate System and Interstate 4R. The withheld apportionment is reapportioned to other States using 104(b)(5) formulas.

6. National Maximum Speed Limit; 23 U.S.C. 141 and 154.

States must not have a maximum speed limit on any public highway in excess of 55 m.p.h. (except as permitted on rural Interstates by 1987 STURAA or rural non-Interstate by P.L. 100-202), and they must certify that they are enforcing all speed limits on public highways. Also, speed limit must be uniformly applicable to all types of motor vehicles.

Penalty—Cessation of project approvals for Federal-aid highway projects if State has higher than allowed speed limit or for failure to certify.

7. National Maximum Speed Limit Enforcement; 23 U.S.C. 154.

States must support their certification of maximum speed limit with data showing that the percentage of vehicles exceeding 55 m.p.h. is less than 50 percent.

Penalty—Withholding of up to 10 percent of the apportionments for primary, secondary, and urban programs for the following fiscal year (application may be delayed one year if Secretary determines it would be a hardship to State). Funds can be restored if following fiscal year's certification shows in compliance.

8. Control of Outdoor Advertising; 23 U.S.C. 131.

States must provide for effective control of the erection and maintenance of outdoor advertising signs along the Interstate and primary systems.

Penalty—Withholding of up to 10 percent of the apportionments for Interstate, primary, secondary, and urban programs. The withheld apportionment is reapportioned to other States. The Secretary may suspend application of the penalty if he finds that to be in the public interest.

9. Control of Junkyards; 23 U.S.C. 136.

States must provide for effective control of the establishment and maintenance of junkyards along the Interstate and primary systems.

Penalty—Withholding of up to 10 percent of the apportionments for Interstate, primary, secondary, and urban programs. The withheld apportionment is reapportioned to other States. The Secretary may suspend application of the penalty if he finds that to be in the public interest.

10. Maintenance; 23 U.S.C. 116.

States must properly maintain any project constructed under the Federal-aid highway program.

Penalty—Cessation of project approvals for all types of projects in the State highway district, municipality, county, and other subdivision of the State or the entire State.

11. Air Quality Nonattainment Areas; Clean Air Act Section 176(a).

States must submit State Implementation Plans which consider transportation control measures.

Penalty—Cessation of project approvals within the non-attainment area if the EPA Administrator determines a nonattainment area is not making reasonable progress to submit its air quality attainment plan. Safety, Mass Transit, and Air Quality Improvement projects under any Federal-aid highway program may continue to be approved. (Note: DOT holds that the penalty is not currently available; EPA disagrees with this interpretation.)

12. Interstate System Resurfacing; 23 U.S.C. 119(b).

Each State must certify on each January 1 that it has a program to maintain the Interstate System in accordance with guidelines issued by the Secretary.

Penalty—Withholding of 10 percent of Interstate System apportionment for failure to certify or if Secretary finds State is not adequately maintaining System in accordance with the required program. Withheld funds can be restored if, within 1 year, State is found to be maintaining System according to guidelines; otherwise, withheld funds are reapportioned to other eligible States.

13. National Minimum Drinking Age; 23 U.S.C. 158 (as amended by Section 4104 of P.L. 99-272).

States must have laws that prohibit the purchase or public possession of any alcoholic beverage by a person who is less than 21 years old.

Penalty—Withholding of 10 percent of the apportionments for Interstate, Interstate-4R, primary, secondary, and urban programs.

14. Commercial Drivers License; Commercial Motor Vehicle Safety Act of 1986, Section 12011.

States must be in compliance with minimum Federal standards for licensing, reporting, and penalties.

Penalty—Withholding (of 5 percent for FY 1994 and 10 percent in the following fiscal years) of the apportionments for Interstate, Interstate-4R, primary, secondary, and urban programs.

Senator MOYNIHAN. And now we go to you, Doctor Campbell.

STATEMENT OF B.J. CAMPBELL, DIRECTOR, HIGHWAY SAFETY RESEARCH CENTER, UNIVERSITY OF NORTH CAROLINA

Dr. CAMPBELL. Mr. Chairman, State seat belt laws are now operating in enough States to cover about 85 percent—I see that we differ by 5 percentage points on our estimates here—80 or 85 percent of the population and they have proved effective in reducing death and injuries. My own studies over the last several years have indicated a fatality reduction of 6 or 7 percent associated with belt laws.

Senator **Moynihan**. Isn't that what Professor Baker said—7 percent? You are coming out with the same numbers.

Dr. **Campbell**. Yes. There are, indeed, several studies that are pretty close to that range. This amounts to a thousand or more deaths saved per year. My analysis of non-fatal injuries indicates about 100,000 casualties per year averted. Belt use increased in every State upon passage of the law, generally doubling or tripling pre-law usage. Pre-law usage rates were generally under 25 percent and now in the post-law period average 47 or 48 percent. The highest belt use in the country is in Hawaii, where it is in excess of 70 percent. Two or three other States tally around 60 percent. However, some belt law States record belt use lower than 40 percent even with the law.

My own estimates of fatality savings from the laws are somewhat lower than the estimates published by NHTSA. However, whichever estimate is more nearly correct, they confirm that deaths are being prevented and injuries averted by the impact of these laws. By any standard, we're enjoying a success, albeit it a moderate one.

The United States is realizing less than half the benefits we might reasonably expect from seat belt laws. That's partly because a significant number of States still haven't enacted a law; and also there exists, State by State, significant loop holes such as the exemption of pick-up trucks and rear seat passengers. Perhaps hardest to believe, in about 10 States police officers themselves are exempted from wearing belts. That's particularly astonishing to me to realize that the police are exempted in view of their high risk driving and I wonder how effectively they can and will enforce the law when they, themselves, are exempted from the use. Beyond these loop holes, there is still another reason for the diminished success of the laws and that is that research has shown that the highest risk drivers are often least likely to be buckled up, as I suppose common sense would suggest.

To repeat, we're realizing less than half the benefits from our seat belt laws that we might reasonably expect if belt usage were to be raised to levels. For example, in most European countries and in Australia, the situation is much more favorable. Surveys in England show that about 90 percent of the people comply with the seat belt law. In Australia, it is above 70 percent. In several European countries, it is 80 to 90 percent. These are values that are generally beyond even our highest State. These higher usage rates in the other countries have also translated into more favorable casualty reduction figures than we have seen here. I will just mention one demographic reason that makes it a little harder for us in this country. In Europe, car ownership per capita is much lower than in the United States. This means that more economically disadvantaged people in the United States nevertheless own cars compared to those similarly situated in Europe. The significance of this point lies in the fact that the research has shown that persons in lower socioeconomic status are less likely to use seat belts than people in the higher range.

Nevertheless, we could do better. I applaud your idea of incentives by which States might be encouraged to increased belt usage. And may I offer a couple of thoughts for your consideration. In part, I think the incentives should be designed to elicit the support of the police community in enforcing these laws and partly to close the statutory loop holes, such as I mentioned. I also recommend an effort to get rid of secondary enforcement. By secondary enforcement, I refer to the statutory language which in most belt law States prohibits the officer from addressing a seat belt violation unless the officer has already stopped the motorist for some other purpose not related to the seat belt violation. The significance of that is that in the eight States that have primary enforcement—that is where they can stop the car just for the seat belt law violation—belt usage in those eight States is generally 12 to 15 percentage points higher than in the States with secondary enforcement. There may be other reasons for this difference in addition to that statutory provision, but I believe States should move in the direction of primary enforcement.

Finally, if your incentive formula is based on the level of belt usage in the States, then of course the measurement procedures and those procedural differences between States take on crucial significance. If sizable sums of money come to depend on these measurements, there will be a problem. The challenge will be to obtain reasonably uniform measurements from the States and to assure that the measurement protocol is followed objectively. If it would be useful, I would be pleased to discuss these matters with your staff. For example, just next week I am going to be involved in a little quick and dirty experiment in which we are going to assemble seat belt measuring people from seven different States and have them stay on the same road and measure the same vehicles to try to get a handle on how much of the differences from State to State is a subject of the measurement procedure rather than the true differences. I will have some modest indication after next week.

I thank you for this opportunity to testify. I hope you will find it possible to enact this initiative. I believe that through a combination of incentives it will be possible to increase belt use in the United States. Of all the measures available, I believe an increase in belt use is the most cost-effective way to reduce traffic injuries at this time.

Thank you.

Senator MOYNIHAN. Thank you, Dr. Campbell.

We will just move on now to Dr. Anzinger.

STATEMENT OF ROBERT K. ANZINGER, CHAIRMAN, DEPARTMENT OF EMERGENCY MEDICINE, GOOD SAMARITAN HOSPITAL, DOWNERS GROVE, ILLINOIS, AND PRESIDENT, AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

Dr. ANZINGER. Mr. Chairman, I am Robert Anzinger, President of the American College of Emergency Physicians and a practicing emergency physician from River Forest, Illinois. I appear today on behalf of the 13,000 members of the College in support of S. 1007, the National Highway Fatality and Injury Reduction Act of 1989.

As an organization of emergency physicians, we see the tragic results of motor vehicle and motorcycle accidents 24 hours a day. From witnessing such human loss and tragedy in emergency departments, we believe that far more strict traffic safety measures must be mandated and enforced.

Frankly, we are appalled that many States have not adopted such obviously beneficial laws. Even more personally regrettable, however, is the fact that my own State of Illinois recently has repealed the motorcycle helmet law.

The American College of Emergency Physicians believe that there is no individual right to behavior such as the refusal to wear seat belts or motorcycle helmets, which significantly increases the probability of death or disability at the expense of others in society who must share the costs of hospitalization, disability payments, or insurance.

According to the National Highway Traffic Safety Administration, if all front seat occupants of passenger vehicles had worn safety belts and all motorcycle riders had worn helmets in 1987, costs would have been reduced by millions, 12,000 lives would have been saved, and 437,000 injuries would have been prevented. This does not even take into account the costs to society in terms of the resources that are inappropriately diverted from the health care system, and the cost to the Federal Government, through such programs as Medicare and Medicaid.

In addition, such injuries further exacerbate the problem of emergency hospital overcrowding and the resultant congestion of holding patients that occurs in emergency departments in many parts of this country.

As an emergency physician with 20 years of experience, I am, unfortunately, all too familiar not only with the statistics associated with motor vehicle and motorcycle accidents, but also with the realities of the pain and suffering involved when an individual is injured or killed. Such firsthand experience in treating those injured in motorcycle and motor vehicle accidents, or trying to console the families of the individuals killed in these accidents, prompted me to come before this committee today in support of S. 1007.

I would like to provide three incidents in which I have been personally involved. The first was a mother and her child who were broadsided on the driver's side. The car was virtually an accordion. Fortunately, the mother's life was spared I believe because she had her seat belt on. She did receive a fracture of her femur and pelvis, but no other injuries. Her child was untouched because she was restrained in a car seat.

The second accident involved a couple in their sixties who received only minor injuries—contusions of the chest from the shoulder harness—despite extensive damage to the car from a head-on collision. Ironically, this couple told me that they would not have worn their seat belts if there were not a law that required them to do so, even after I told them that the seat belt probably was responsible for saving their lives.

The third accident occurred when a deer ran out onto an Interstate and was hit by a motorcyclist. The rider was thrown from the motorcycle and sustained a basal skull fracture. I am convinced that the injuries sustained by that rider would not have been as serious if he had been wearing the helmet.

In conclusion, Mr. Chairman, we urge the subcommittee to expeditiously approve S. 1007 in order to require all States to pass safety belt and motorcycle helmet legislation. The evidence is clear that safety belts and motorcycle helmets save lives and reduce serious injuries, which in turn reduces the costs to society and the health care system that result from car and motorcycle accidents.

I thank you and the committee.

Senator MOYNIHAN. We thank you, Doctor, for some very graphical, clinical accounts of what Senator Chafee's legislation is concerned with.

It is hard to recall this, but 40 years ago a very common explanation of someone having had a vehicle collision and survived it was to say that they were thrown clear of the accident. Which was to say that with luck one would fly out of the car and be wrapped around the telephone pole or something. But it was thought that somehow the environment externally was safer than the one internally. We learn.

Senator Chafee.

Senator CHAFEE. Thank you very much, Mr. Chairman. I just want to briefly say how much I appreciate the testimony of everyone here. Doctor Anzinger reminds me of how I became interested in this subject. One of my sons brought home for dinner a friend of his who was a doctor in the emergency room of our principal hospital. I must say that at that time I had never worn a seat belt very much and hadn't given the matter a great deal of thought. He pointed out that he could instantly tell, when a motor vehicle accident patient came into the emergency room, if that person had worn a seat belt, because the chances of the injuries being relatively minor were vastly increased over the chances of those who had no belts.

The description of those who were involved in accidents without seat belts made me a confirmed fan of seat belts and I have tried to use them since. But the point is the one you make here, that those unfortunate individuals who are involved in accidents without their helmets or without their seat belts not only do damage to themselves, they do damage to all society through the tremendous costs that everybody has to bear.

I think the point Dr. Baker made about the terrible suffering that comes from injuries from automobile accidents is an important one. We've all seen it. I don't think there is a person in the room who could not name three or four acquaintances who have been killed in automobile accidents, but also know those who are left in terrible condition as a result of these accidents. So, it is a two-fold effort we're making here: one, to reduce the deaths, and two, to reduce the injuries. All too often the injuries aren't discussed. It is always discussed on the basis of deaths—50,000 deaths, we can reduce it by so many deaths—but the injuries count just as much.

Dr. Campbell, I was interested in your measurements. And as the Chairman, who is deeply involved in statistics pointed out, your statistics and Dr. Baker's statistics come fairly close. In other words, I think you both said in the 5 to 7 percent range of deaths could be reduced.

Ms. Baker. And injuries as well.

Senator Chafee. And injuries would follow that.

Senator Moynihan. Is that an independent work or is that now a consensus number?

Ms. Baker. I am mainly basing my estimates on the new Cost of Injury Report.

Dr. Campbell. I was reporting my own work, but there are several other studies that are in that range. Actually, I think the reduction number for injuries is probably higher. That is, I think it is probably 5 or 7 percent for fatalities, and I think it is probably 10 or so percent for injuries.

Senator Chafee. What we've got to wrestle with here in this legislation is how to get the enthusiastic support of the State. Obviously, there is no good to come of a Federal law if there is no one out there to enforce it. We don't have Federal troopers racing around. So the objective is to get the support—and it has to be an enthusiastic and willing support—of the States. We've seen that succeed in the similar approach we took in raising the drinking age to 21 and the monitoring of the drunk driving laws that we've done. We follow the same procedure. The States had their option. They didn't have to pass any laws dealing with raising the drinking age to 21. The only thing that happened was that their Federal Highway funds were reduced and that got their attention and all of them passed the laws. I think, unquestionably, that has contributed to the stability of the death rate on our highways. It has hovered around 47,000 a year despite the increased mileage. What we did on the increased age of drinking has, I am sure, been of assistance there.

My time is up, Mr. Chairman. Thank you.

Senator Moynihan. Senator Jeffords.

Senator Jeffords. I am afraid to say I remain unconvinced that this is an area that the Federal Government ought to move into. Also, I have a difficult time believing that mandating laws is more appealing or more successful than education. So, I let you know that before I start my questions.

First of all, how do you measure the compliance? Where do those figures come from? How do you do that, Doctor Campbell?

Dr. Campbell. I will tell you how we do it in North Carolina and that is pretty much the same way around the country. In North Carolina, we use a sampling procedure and have selected 72 sites. Several times a year we send observers to those same 72 sites and they monitor seat belts. They stand on the corner and count seat belts for a couple of hours. These 72 sites encompass Interstate, urban, and rural roads, and so forth. We estimate compliance from that. So, most every State has a multi-site sampling procedure where observers go to the scene and maybe stand by a stop sign so they can step right up to the car to see whether the seat belt is in use. That is the procedure. Although, as I indicated in my testimony, there are differences in measurement procedures from State to

State at present which contribute an unknown amount—I don't think a very large amount—to the State-to-State difference.

Senator **Jeffords**. It is my understanding statistically there is a difference but it is not huge in those States that mandate and those that do not mandate. I think it is 50 percent in the mandated States and about 35 percent in the nonmandated States. It would seem to me that probably the difference between the mandated and nonmandated is more of an educational situation in a sense that people who know it is illegal are more likely to be aware that they ought to wear their seat belts. It seems to me that if we were to do more on the educational side, we would be more likely to get a larger compliance than we would just by merely mandating, if we only get 50 percent or so if we mandate. It seems to me that a better approach is to do more on the educational side. I assume you will disagree with that, but go ahead, Professor Baker.

Ms. **Baker**. I would just like to use some of the evidence from the motorcycle helmet studies with reference to education. Certainly, I think motorcyclists in most States—whether the States have or have not helmet laws—are fairly familiar with the potential benefit of helmets. Many of the motorcyclists who oppose the laws wear their helmets at least most of the time or at particular times. However, we see that in the States that have laws, there is virtually complete compliance by the motorcyclists. In the States that do not have laws, no matter how much education there has been, the usage rate runs generally between 40 and 60 percent. This is why I say that this is the single most effective injury prevention measure that I know of, not only the helmet itself, but the laws that require helmet use.

We have seen fairly consistently 25 to 30 percent reductions when States have passed motorcycle helmet laws and then, as they repealed those laws, the number of deaths has gone up again. If we were experimenting on rats in a cage scientifically—giving them some medicine, seeing the benefit in terms of lives saved, withdrawing the medication, seeing the lives being lost again, giving the medication, seeing what happened—that's the sort of evidence we're getting from the motorcyclists with regard to laws. We just simply do not see that kind of effect with any educational program that I have ever heard of.

Senator **Jeffords**. Would you urge us then, at the Federal level, to mandate diets and to investigate homes as far as diets are concerned? We would save a lot more money if we had good nutrition in this country. Do you think that is a proper role of the government?

Ms. **Baker**. No. But neither do I know of any single measure with regard to home safety which would cause the kind of reductions that we can see with motorcycle helmet laws.

Public health is sort of a matter of trying to find a logical place on a spectrum of possible interventions, if you will—with being very permissive at one end of the spectrum and with an extreme amount of regulation at the other end—and we try to find someplace along this spectrum which seems to be a reasonable place for agreement. Certainly for many of us, motorcycle helmet laws and seat belt laws, because they represent relatively simple things that people can do with a known outcome that has been scientifically demonstrated to be extremely effective, would fall within the reasonable part of the spectrum. I would concur, however, that it is very difficult to say if you do one thing, why not another. But that should not keep us from making a reasonable decision.

Senator MOYNIHAN. I wonder if Senator Jeffords would recognize that while that is an entirely legitimate question, it is a question we used to ask about vaccination all through the 19th century.

Senator JEFFORDS. I think there is a vast difference in vaccination, where you are subjecting others to a health problem, than it is where you are trying to protect the individual health of someone who is in a sense endangering himself and not the public. I grant the arguments are there on cost, but the arguments are there on cost in nutrition, as well. I have a hard time, philosophically, accepting that the role of the Government is to tell us how to lead our lives. Why don't we have motorcycle riders wear armored suits? Where do you draw the line. It is my understanding that the largest percentage of injuries are not by head, but are injuries to the chest and the abdominal areas and things like that. So, where do you stop? I just have a hard time philosophically accepting the role of the Government, especially the Federal Government, in this particular area.

Senator MOYNIHAN. That is a perfectly fair question. That's what we're here to debate.

Senator CHAFEE. I think it's a fair question, Mr. Chairman. All these things are matters of degree. I think the most significant safety step taken in automobiles in the past half century has probably been the introduction of safety glass. Prior to safety glass coming along in the late 1920s and early 1930s, the number of fatalities in our State, for example, was far in excess of what it is today. So safety glass has been a tremendously significant advancement. Now, the presence or absence of safety glass doesn't affect anybody else on the highway; it only affects the person in the vehicle.

Senator JEFFORDS. That is a question of the manufacturer being required to make safer vehicles. I think that is a substantially different question than requiring an individual to protect him or herself solely. Anyway, I said my piece.

Senator MOYNIHAN. These are a spectrum of matters about which people of good faith will have different views. I think Professor Baker is right, the whole history of public health—which is the history of health—has been the question of what is an appropriate invasion of a personal sphere. Judgments differ to different places.

Could I just ask you, Dr. Campbell, you are the statistician present, I wonder if you would do for the committee the service that you offered. We have had what I guess is called a natural experiment where certain States have put helmet laws into effect and then repealed them, so we have a before, a during, and an after. You would not dare do that as a matter of policy in order to discover the consequences, but since it happened on its own, we could see that change, couldn't we? Could you get that for us, Doctor?

Dr. CAMPBELL. Yes. I have not personally analyzed that, but NHTSA has a report which they have published which contains that data.

Senator MOYNIHAN. Could you see that we get the information?

Dr. CAMPBELL. Sure.

[The information requested follows:]

U.S. Department of Transportation
National Highway Traffic Safety Administration

Research Notes

September 1989

THE EFFECT OF HELMET LAW REPEAL ON MOTORCYCLE FATALITIES - A FOUR YEAR UPDATE

Ellen S. Hertz

Background

Motorcyclist fatalities constitute, on average, about 10% of all fatalities resulting from motor vehicle accidents reported to police each year. In absolute terms, this represents an estimated 3,661 fatalities for 1988, down from a high of 5,144 in 1980 (Fatal Accident Reporting System).

While the number of motorcyclist fatalities is small relative to the total number of motor vehicle fatalities, the fatality rate for motorcyclists is many times greater than the equivalent rate for occupants of passenger vehicles. In 1987, for example, motorcyclists experienced an occupant fatality rate of 41.0 per 100 million miles traveled in comparison to a fatality rate of 1.9 per 100 million miles traveled for passenger vehicle occupants. Motorcyclist fatalities, fatalities per 100 million miles traveled, and several other statistics are presented in Table 1 for the period 1980 through 1988.

Table 1
Selected Motorcyclist Fatality Statistics

Year	Total Fatalities	Motorcycle Fatalities	Percent of Total	MC Fatality* Rate
1980	51,091	5,144	10.1%	50.4
1981	49,301	4,906	10.0%	45.9
1982	43,945	4,453	10.1%	44.9
1983	42,589	4,265	10.0%	48.7
1984	44,257	4,608	10.4%	52.5
1985	43,825	4,564	10.4%	50.2
1986	46,087	4,566	10.0%	48.6
1987	46,390	4,036	9.0%	41.0
1988	47,093	3,661	8.0%	N/A

* Vehicle miles travelled (VMT) estimates from FHWA

One means of preventing motorcyclist fatalities is the imposition of helmet use laws for all motorcyclists. NHTSA estimates helmets are 29% effective in preventing motorcyclist fatalities (Wilson, 1989),

National Center for Statistics & Analysis . Research & Development . 400 Seventh St., S.W. Washington, D.C. 20590

and states requiring all motorcyclists to use helmets consistently report very high use rates. The latest data on helmet use from NHTSA's 19 Cities Survey (July 1989) reflect a usage rate of almost 100% at sites where use laws are in effect, as opposed to a usage rate of approximately 50% at nonlaw survey sites. The degree to which these observed usage rates reflect usage rates nationally, or usage rates for accident involved motorcyclists is unknown. Twenty-two states presently require all motorcyclists to wear a helmet.

Significant changes have occurred in the number of states mandating helmet use by all motorcyclists since 1975. The number of states with such laws decreased from 47 in 1975 to only 19 in 1984. Analysis of the effects of these changes in helmet use laws over this period by de Wolf (1986), estimated that repeal of state laws requiring helmet use for all motorcyclists resulted in an estimated 21.3% increase in the fatality rate (fatalities per crash).

Objective

The objective of the present analysis was to update NHTSA's estimate of the effects of helmet use law repeal, taking advantage of the four additional years of experience available since de Wolf's original analysis (1985-1988). Oregon was the only state during this period to revise its helmet law, requiring all riders to be helmeted beginning June 14, 1988.

Methodology

A multivariate linear regression model originally developed by de Wolf (1986) was used to update the estimate of helmet law repeal effects. This model uses the fatality rate for motorcyclists (fatalities per crash) as the measure of helmet law effect, and takes into account the effects of a number of other factors, i.e., number of motorcycle registrations, state effects, year effects, and a helmet law effect. The general form of this model is:

FATALITY RATE = A + B*NOLAW + C*REGISTRATIONS + D1*STATE DUMMY1 + ...
D49*STATE DUMMY49 + E1*YEAR DUMMY1 +...+ E12*YEAR DUMMY12 + ERROR TERM

For the purposes of this analysis, states requiring helmet use for some, but not all, motorcyclists were considered to not have a helmet law. A complete description of the derivation of this model is contained in de Wolf, 1986. Fatality data were obtained from the Fatal Accident Reporting System (FARS). Total accident and registration data were obtained from the Motorcycle Statistical Annual published by the Motorcycle Industry Council.

Findings

The extension of this model to include an additional 4 years of crash experience produces an estimated 19.6% increase in motorcyclist fatalities resulting from the repeal of helmet use laws during the period 1975 to 1988 (95th percentile confidence limits 9.1% to 31.1%). This estimate differs only slightly from the original estimate of 21.3%, and is well within the 95th percentile confidence limits for de Wolf's original estimate (10.4% to 33.3%). These findings clearly indicate that the presence of a mandatory helmet use law remains an effective countermeasure for reducing the number of motorcyclist fatalities by approximately 20%.

As further confirmation of these findings regarding helmet law repeal, the paired comparison method used to estimate seat belt benefits was employed to estimate helmet effectiveness. Helmet effectiveness, along with estimates of helmet use, allow an estimate of the effects of helmet law repeal:

- o Helmet effectiveness of 29%.
- o 100% helmet use in states with mandatory use laws covering all motorcyclists.
- o 50% helmet use in nonlaw states.

Utilizing these figures and standard calculations, fatalities are estimated to increase 20.4% as a result of helmet law repeal. This value is essentially identical to both the original and updated estimates of the percent increase in the fatality rate resulting from helmet law repeal.

As the model describes the relationship between the absence of a helmet law and the motorcyclist fatality rate, irrespective of whether or not a law was repealed or simply never enacted, the estimated increase in fatalities can be considered an estimate of the effect of helmet laws per se. Thus, states with no helmet law, regardless of whether or not it was repealed, as opposed to never enacted, are estimated to experience approximately 20% more motorcyclist fatalities than would have occurred otherwise.

Presented in Table 2 are the total number of fatalities in states without helmet laws, and the number of lives that would have been saved in states without helmet laws using both de Wolf's original, and the present updated estimate of effect for 1984 through 1988.

Table 2

Lives Savable by Helmet Laws
in States Without Helmet Laws

		Estimated Effect	
Year	Fatalities	19.6%	21.3%
1984	2928	480	514
1985	2946	456	517
1986	2986	462	524
1987	2622	406	460
1988	2878	472	505
Total	14360	2276	2520

These data indicate that between 2,276 and 2,520 lives have been lost as a consequence of the lack of helmet use laws covering all motorcyclists in all states for the period 1984 through 1988. These estimates represent between 1% and 2% percent of total occupant fatalities in each of these years. It is worth noting, however, that the trend in motorcycle helmet use laws that took place between 1975 and 1984 may be reversing. Since the beginning of 1988, three states have enacted helmet laws (Engle, 1989). Oregon's new law took effect June 14, 1988. Nebraska's became effective on January 1, 1989, and Texas's became effective September 1, 1989.

NHTSA will continue to estimate helmet law effectiveness as changes in the status of state mandatory helmet use laws occur.

References

de Wolf, V. "The Effect of Helmet Law Repeal on Motorcycle Fatalities" DOT HS 807 065, NHTSA Technical Report, 1986.

Engle, R., Traffic and Safety Programs, NHTSA. TSP Report, May 1989.

Motorcycle Industry Council, Inc., Motorcycle Statistical Annual, 1975-1988.

Wilson, D. "The Effectiveness of Motorcycle Helmets in Preventing Fatalities", DOT HS 807 418, NHTSA Technical Report, 1989.

US Department
of Transportation

National Highway
Traffic Safety
Administration

DOT HS 807 065
NHTSA Technical Report

December 1986

The Effect of Helmet Law Repeal on Motorcycle Fatalities

This document is available to the public from the National Technical Information Service, Springfield, Virginia 22161

Technical Report Documentation Page

1. Report No. DOT HS 807 065	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle The Effect of Helmet Law Repeal on Motorcycle Fatalities		5. Report Date December 1986
		6. Performing Organization Code NHTSA-NRD-31
7. Author(s) Virginia A. de Wolf		8. Performing Organization Report No.
9. Performing Organization Name and Address National Center for Statistics and Analysis Mathematical Analysis Division 400 7th St., S.W., Washington, D.C. 20590		10. Work Unit No. (TRAIS)
		11. Contract or Grant No.
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590		13. Type of Report and Period Covered Technical Report
		14. Sponsoring Agency Code NHTSA, NCSA, NRD-31

15. Supplementary Notes

16. Abstract

Between 1975 and 1984 over half of the States either repealed or weakened their laws requiring motorcyclists to wear safety helmets. The purpose of this study was to obtain a national estimate of the effect of these legislative changes on the motorcycle fatality rate (per motorcycle accident) over this 10-year period.

The current research estimates that the repeal of helmet use laws was associated with a 10.4% to 33.3% increase in the fatality rate (per accident). If helmet use laws had continued to be in effect in the States that repealed or weakened them, an estimated 158 to 420 fewer motorcycle rider fatalities would have occurred in 1984 -- a 3.6% to 9.5% decrease.

17. Key Words motorcycle fatalities, motorcycles, safety helmet laws	18. Distribution Statement Document is available to the public through the National Technical Information Service Springfield, VA 22161

19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 20	22. Price

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

The Effect of Helmet Law Repeal on Motorcycle Fatalities

Between 1975 and 1984 half of the States either repealed or weakened their laws requiring motorcyclists to wear safety helmets. The purpose of this study was to obtain a national estimate of the effect of these legislative changes on the motorcycle fatality rate over this 10-year period. Accordingly, this study evaluates the repeal of helmet use laws on the motorcycle fatality rate. It does not evaluate the effectiveness of motorcycle safety helmets.

Background

The Highway Safety Act of 1966 and its implementing regulations strongly encouraged the States to enact mandatory motorcycle helmet use laws. The Act stated that the Department of Transportation would withhold 10 percent of Federal highway construction funds and all Federal highway safety funds from States that were not implementing an approved highway safety program. Under the Department's implementing regulations, a State's highway safety program would not [illegible] approved unless its law provided that motorcycle operators and passengers wear an approved safety helmet. By 1975 the District of Columbia and 47 States required all motorcyclists to use helmets. In 1975 the Department of Transportation began to investigate whether Federal funds should be withheld from the noncompliant States. However, the passage by Congress of the Highway Safety Act of 1976 withdrew the authority of the Department to withhold these funds from States that failed to adopt and enforce laws requiring motorcycle operators and passengers eighteen years of age or older to wear a safety helmet when operating or riding a motorcycle on the streets and highways of the State (National Highway Traffic Safety Administration [NHTSA], 1980).

Table 1 summarizes the changes that occurred in motorcycle helmet use legislation, separately for each year between 1975 and 1984, for all States and the District of Columbia. Using the dates and law provisions in Appendix A, each State was categorized into one of four groups depending on the extent of coverage of its helmet use law: a law that covered all riders, one covering only some riders, no helmet use law, or the State was in transition and changed its helmet law during the year. Over this period 28 States either weakened or repealed their helmet use laws. The most "typical" change occurred in the two-year period after the Highway Safety Act of 1976 (i.e., in 1977 or 1978) and went from a law covering all riders to one covering only those under 18 years of age. It should be noted that throughout this ten-year period riders under 18 were required to use safety helmets by 41 States and the District of Columbia.

During the period in which helmet use laws were being weakened, motorcycle accidents and fatalities began to rise. Table 2 contains these data, along with the fatality rate (expressed as fatalities per 1,000 accidents), for the 50 States

Table 1

Number (N) and Percent (%) of States Categorized by Extent of Helmet Law Coverage, Separately by Year

Year	Extent of Coverage of Helmet Law									
	All Riders		Some Riders		No Law		Transition		Total	
	N	%	N	%	N	%	N	%	N	%
1975	47	92.2	1	2.0	2	3.9	1	2.0	51	100
1976	40	78.4	1	2.0	2	3.9	8	15.7	51	100
1977	26	51.0	6	11.8	4	7.8	15	29.4	51	100
1978	22	43.1	16	31.4	9	17.7	4	7.8	51	100
1979	21	41.2	20	39.2	9	17.7	1	2.0	51	100
1980	20	39.2	21	41.2	8	15.7	2	3.9	51	100
1981	20	39.2	22	43.1	9	17.7	--	--	51	100
1982	21	41.2	20	39.2	9	17.7	1	2.0	51	100
1983	20	39.2	21	41.2	9	17.7	1	2.0	51	100
1984	20	39.2	22	43.1	9	17.7	--	--	51	100

Note. Data are based on the 50 States and the District of Columbia.

Table 2

Total Number of Motorcycle Rider Fatalities and Accidents and the Fatality Rate (per 1,000 Accidents), Separately by Year

Year	Fatalities	Accidents	Fatality
	Number	Number	Rate
1975	3113	143879	21.6
1976	3238	147556	21.9
1977	4008	171252	23.4
1978	4451	169395	26.3
1979	4713	177984	26.5
1980	4961	177160	28.0
1981	4746	175022	27.1
1982	4270	165689	25.8
1983	4104	168439	24.4
1984	4431	169685	26.1

Note. Data are based on the fifty States. Fatality rate is expressed as fatalities per 1,000 accidents.

over the 10 years. The District of Columbia was omitted from this table because a complete series of motorcycle accident data was not available. Accidents and fatalities increased sharply between 1976 and 1978. They continued to climb until 1980 and then declined until 1983. The fatality rate also followed this pattern with a rate of 21.6 fatalities per 1,000 accidents in 1975, a rate of 28.0 in 1980, and 24.4 in 1983.

The current study quantified the impact of the 1976 Federal legislation which resulted in the weakening of State helmet use laws. Specifically, ten years of State-level motorcycle accident and fatality data were analyzed to estimate the effect of the repeal of helmet use laws on the motorcycle fatality rate (per motorcycle accident).

Basic approaches

There are four basic approaches to studying the impact of repeal of helmet use laws: one-State studies, grouping States then comparing law vs. no-law States, combining data from all States then examining the trend over time, and simultaneously considering the States individually and across time. A review of these follows with greater attention placed on the latter three approaches since all three attempt to make a national assessment.

Most studies on the impact of safety helmet use law repeal or weakening were undertaken in the late 1970's and examined the effect on a single State (e.g., Colorado, Kansas). Typically, they compared the data before and after repeal of the helmet use law. This type of approach is termed a "one-group pretest-posttest design" (Campbell and Stanley, 1963). To briefly summarize the results from these studies, they reported that before helmet use laws were repealed use was high (over 90%). After repeal two effects were noted: (1) the wearing of helmets substantially declined but did not disappear (post-repeal use was about 50%); and (2) head-related injuries and fatalities showed a corresponding increase. See NHTSA (1980) for an excellent review of the pre-1980 one-State studies. Obviously, a major problem with one-State studies is that they cannot be generalized to the nation as a whole. The next three approaches use data from all of the States and attempt to make national estimates.

The second approach uses data from all States and then contrasts two groups, one comprised of States with helmet use laws and the other comprised of those without laws. Depending on the specific rate and year selected, it is possible that the group of States without helmet laws might have a lower fatality rate than the group with helmet laws. For example, using 1981 data, the fatality rate (fatalities per 10,000 registered motorcycles) of States with helmet laws was higher than the fatality rate of the group of States with no or partial helmet laws (8.4 versus 8.0, respectively). However, when using the same data but a rate expressed as fatalities per 1,000 accidents, the helmet law States had a lower fatality rate than those with no or partial laws (25.2 versus 28.2, respectively).

Another variant of this approach combines data from several years and then compares two groups. For example, Chenier and Evans (1984) formed a "treatment" group consisting of all States that repealed or weakened their helmet use laws between 1975 and 1982 and a "control" group comprised of those States that had not substantially altered their laws during this eight-year period. The fatality data of the control group provided an estimate of what would have happened to each treatment State had there been no repeal. The individual State results were used to calculate the average effect of repeal. These authors reported a 28% increase in fatalities due to the repeal or weakening of helmet use laws.

Both the single-year and multiple-year two-group comparison studies have methodological shortcomings. First, there are State-level differences that would affect any aggregate comparisons of two subgroups of States. Two such differences follow:

(1) States have different "propensities" for motorcycle rider fatalities. These propensities depend on factors such as the climate, terrain, proportion of a State's population in the age group likely to ride motorcycles, etc.

(2) More importantly, a State that enacted a helmet law could experience a substantial decrease in fatalities after the law was made effective and still have a higher fatality rate than a State without a helmet law because of differential propensities as noted above.

Secondly, studies, such as Chenier and Evans (1984), that collapse over years cannot incorporate the yearly trend in motorcycle fatality data. As noted earlier in Table 2, the number of fatalities and accidents fluctuated over this ten-year period with a substantial increase in the late 1970's and a gradual decline in the early 1980's. Since these data were not constant across the period, biased estimates more than likely would occur when collapsing across States and across years. Therefore, because of State-leval differences and yearly fluctuations in the fatality data, it is important to use an approach which incorporates components accounting for both State and yearly variations.

The next approach uses the data from all States but examines these data across time. This is a time series design (Cook and Campbell, 1979). For instance, NHTSA (1980) plotted the trend in motorcycle fatalities per 10,000 motorcycles between 1958 and 1979 and reported that a statistically significant change occurred in this rate during the mid-1960 period when most States enacted their helmet laws. In addition, NHTSA used this time series to demonstrate a link between the increased fatality rate and the States' repeal of helmet laws in the late 1970's. Adams (1983) argued that these data were too highly aggregated to support any defensible inferences about the efficacy of helmet legislation. He attempted to correct the aggregation "problem" by creating two groups (repeal versus nonrepeal) and plotting their fatality rates during the late 1970's. He concluded "...that when disaggregated the data do not support the NHTSA's conclusion" (p. 194). That is, since the nonrepeal States generally had a higher fatality rate than the repeal States during the late 1970's, he concluded that "...the blame for the increase in the death rate cannot be placed on helmet law repeal..." (p. 194).

Another example is provided by a Washington Post article (Colburn, 1986). In this article the motorcycle fatality rate (fatalities per 100,000 miles) between 1964 and 1984 was plotted. The increase in the motorcycle death rate after 1976 was associated with the repeal or weakening of helmet use laws. One of the major shortcomings of this third approach is that it is too highly aggregated (even when using two subgroups). As noted above, States differ and these differences need to be taken into account.

The final approach is the one selected for the current study. Overcoming the disadvantages of the preceding approaches, it uses a complex dataset that contains the data from each State in each year (that is, 50 States over 10 years provides 500 observations). It is called a pooled cross-section (i.e., different States in one year) and time series model (i.e., each State across a ten-year period of time). This model allows an analyst to incorporate State-specific and year-specific differences in a regression analysis.

At the same time that the current study was being done, two other researchers were doing a similar type of analysis. Graham and Lee (in press) used covariance analysis on the pooled cross-section and time series motorcycle data to analyze the effect of helmet legislation over the 1975-1984 period. These authors tested five multiple regression models, one of which used the logarithm of the fatalities as the dependent measure while the other four used the logarithm of fatalities per registered motorcycle. To assess the impact of helmet safety legislation, they constructed a dummy variable that contrasted States which had "strong" laws covering all motorcycle riders with those which had no or "weak" laws. The coefficient of the law variable was statistically significant in all models. They concluded that the presence of a "strong" helmet law was associated with about a 12 percent decline in the motorcycle fatality rate (per registered motorcycle) or with a 22 percent decline in motorcycle fatalities, other factors held constant.

Two components of Graham and Lee's methodology can be criticized: the appropriateness of the exposure measure (registered motorcycles) used to construct their fatality rate and a more technical concern -- failure to test for autocorrelation in their model.

First, in computing a fatality rate, some exposure measure must be used. Vehicle miles traveled (VMT) is frequently used as an exposure measure. VMT is a reasonable exposure measure since increased mileage increases the risk of an accident. Because VMT for motorcycles was not available, these authors selected motorcycle registrations as a proxy.

While registrations may be a reasonable proxy for automobile travel, registrations are not a very good proxy for motorcycle travel because of two important differences. First, national VMT increased over this period, as did automobile registrations. However, motorcycle registrations demonstrated a different pattern. They increased in the late 1970's and decreased after 1980. Another difference is vehicle use. When people register an automobile it is very likely that this vehicle is used on a daily or very regular basis, for example, in commuting. However, motorcycles are more likely to be used on an occasional basis for recreational purposes. Consequently, a rate of fatalities per registered motorcycle is not as good a proxy as a rate of fatalities per registered automobile. Rather, as will be discussed below, fatalities per accident is better.

The second shortcoming of Graham and Lee's model concerns a technical specification -- failure to test for autocorrelation. In a regression model, the residual represents the portion of the dependent variable which cannot be explained by the independent variables. Typically, the residuals from a regression model behave in a random manner. However, with time-series data these residuals may be correlated and not random (Kmenta, 1971). Autocorrelation is the term used to describe models where successive residuals are correlated. If residuals are autocorrelated then the parameter estimates for the model are not statistically "efficient." That is, the standard errors of the parameters are not at a minimum. The parameter values themselves are unbiased. If autocorrelation exists, the tests for statistical significance of the parameters in a model may not be correct.

Methods

Selecting the dependent variable

Motorcycle rider fatalities can occur for a number of reasons (chest injury, head injury, etc.). Since many causes of death cannot be prevented by helmet use, it would be ideal to use a dependent variable which only reflects helmet use. Obviously, helmets lessen the severity of head and neck injuries. As suggested by NHTSA's 1980 paper, the best exposure measure would be head injuries and the best fatality measure would be fatalities from head injuries. Unfortunately, these data do not exist nationally. Therefore, the current report used the total number of fatalities, rather than fatalities due to head injuries, in assessing the impact of repeal.

Table 3 presents the distribution of motorcycle rider fatalities for two age groups (under 18 years versus 18 years and

Table 3

Number and Percent (%) of Motorcycle Rider Fatalities by Age Group, Separately by Year

Year	Age Group					
	Less Than 18 Years		18 Years or Older		Total	
	Number	%	Number	%	Number	%
1975	501	16.1	2608	83.9	3109	100
1976	464	14.3	2772	85.7	3236	100
1977	560	14.0	3443	86.0	4003	100
1978	633	14.2	3811	85.8	4444	100
1979	610	13.0	4097	87.0	4707	100
1980	528	10.7	4429	89.4	4957	100
1981	422	8.9	4315	91.1	4737	100
1982	380	8.9	3880	91.1	4260	100
1983	340	8.3	3758	91.7	4098	100
1984	355	8.0	4063	92.0	4418	100

Note. Data are based on the fifty States. There are 66 motorcycle rider fatalities with age unknown in the 1975 to 1984 FARS files.

older) for 1975 to 1984. The age of 18 was used because helmet use laws that covered only a portion of a State's population generally require helmet use of those under 18. Table 3 reveals that the proportion of motorcycle rider fatalities for those under 18 has steadily declined between 1975 to 1984 (from 16% to 8%, respectively). One could offer several reasons for this decline. First, it may partially reflect the steady decrease over the ten-year period in the population of those 14 to 17 years old who constitute the under 18 age group. In 1975 those between 14 and 17 represented nearly 8% of the population whereas in 1984 they represented about 6% (Bureau of the Census, 1980, 1985). It might also partially reflect the consistent and relatively high degree of helmet use coverage for this age group, since throughout this ten-year period over 80% of the States had helmet use laws for those under 18. Or it might reflect decreased ridership and, hence, decreased exposure to risk of being killed in a motorcycle accident. Whatever the reasons, the bulk of motorcycle rider fatalities occurred in the 18 and older age group.

As might be expected, the number of motorcycle rider fatalities varied greatly among the States. In Table 4 the States are rank-ordered by the number of 1984 motorcycle rider fatalities. In 1984, motorcycle rider fatalities ranged from a low of 7 in Delaware, North Dakota, and Rhode Island to a high of 829 in California. The three States with the greatest number of motorcycle rider fatalities (that is, California, Texas, and Florida) accounted for 34% of the total number of motorcycle rider fatalities in 1984 and the top-ranking nine States accounted for 55%.

Because of the tremendous variability among the States in motorcycle rider fatalities, it seemed inappropriate to use only fatalities as the dependent variable in regression analysis since this statistical technique is very sensitive to data points that are extreme. Therefore, the dependent variable needed to have fatalities expressed as a rate. This would normalize the fatality variable among the States.

What would be a good exposure measure? The three criteria for selecting such a measure are availability, conceptual clarity, and accuracy. Either VMT for motorcyclists or number of licensed motorcyclists would be good measures, but the former is not available and the latter is not consistently available from the States. Often, proxies for VMT are selected and used to form a fatality rate.

There are very few variables which are suitable either in their own right or as proxies. One possibility is population. While population numbers are very accurate, population is not a conceptually clear exposure measure since only a small number of individuals ride motorcycles and it is very difficult to target this group of riders. For instance, how would a fatality rate based on those 18 and older be interpreted? And would it make sense to include those over 65 in such a rate?

Table 4

States Listed in Descending Order by Number of 1984 Motorcycle Rider Fatalities

State	Fatalities	State	Fatalities
California	829	Minnesota	61
Texas	357	Virginia	61
Florida	304	Alabama	50
Ohio	205	Mississippi	50
New York	166	New Mexico	49
Pennsylvania	165	Kentucky	48
Illinois	158	Kansas	47
Michigan	147	Iowa	44
Arizona	114	Utah	37
Wisconsin	97	Maine	32
North Carolina	96	Arkansas	30
Tennessee	95	Idaho	27
South Carolina	91	Montana	27
Connecticut	88	West Virginia	27
Georgia	84	Nebraska	25
Indiana	80	New Hampshire	16
Massachusetts	80	Hawaii	15
Colorado	73	Wyoming	14
Missouri	73	Nevada	13
Maryland	72	Alaska	10
Washington	71	South Dakota	9
Louisiana	67	Vermont	8
Oklahoma	66	Delaware	7
New Jersey	63	North Dakota	7
Oregon	63	Rhode Island	7

Registrations a [illegible] second possibility. While for some reporting purposes a [illegible] based on motorcycle registrations might be quite appropriate, [illegible]re is a conceptual problem when registered motorcycles is used as a proxy for motorcycle VMT. In addition, the accuracy of motorcycle registration data has been questioned (NHTSA, 1980).

Lastly, motorcycle accident data are another possibility. Rather than using surrogates for VMT, VMT could be considered a surrogate for accident exposure. That is, the greater the number of miles driven the greater the likelihood of an accident. Further, the use of helmets is unlikely to affect accident involvement. Conceptually, then, accidents seem to be an excellent measure to use in the rate. However, as with the motorcycle registration data, the accuracy of available motorcycle accident data (published annually by the Motorcycle Safety Foundation or MSF) could be questioned. The MSF collects motorcycle accident statistics from the States. The Foundation estimates the number of motorcycle accidents for a few States that do not provide them. In addition, States use different bases for their accidents (such as damage threshold). However, all things considered, among these three choices the accident data seemed to be the most suitable conceptually and for this reason accidents were selected as the exposure measure.

It would have been desirable to use only fatality and accident data of those 18 and older, since this group was most affected by the repeal of helmet use legislation. However, the accident data were not available by age groups. Therefore, a rate of total motorcycle rider fatalities over total motorcycle accidents became the dependent variable.

Questions may arise because data for motorcycle riders under 18 were included in this model. Three possible consequences exist. First, if the fatality rates for the two groups (under 18 versus 18 and older) did not differ then combining the two groups would not affect the results. However, if the fatality rate for the younger group was lower, the impact of repeal on the fatality rate would be understated. If the rate was higher, the impact would be inflated.

Two facts suggest that the inclusion of those under 18 does not pose a problem. First, the proportion of fatalities for this group are quite small (under 16% for each year) compared with fatalities for those 18 and older. In addition, NHTSA's 1980 report suggests that partial helmet laws (laws covering those under 18) may not be very effective. That is, the helmet use for those under 18 in partial law States is lower than helmet use for the same age group in States with laws covering all riders. Finally, NHTSA's report also hypothesizes that it may be very difficult for police officers to enforce mandatory helmet use for a specific age group.

Methodology

To determine the impact of the repeal of helmet use laws on the fatality rate (per accident), a model was constructed using the pooled cross-section and time series motorcycle data. A regression approach that corrected for autocorrelation was used. Essentially, the model measured the effect of repeal while controlling for other variables that affect the fatality rate (such as State-specific differences).

Since accident data for the District of Columbia were not available over the 10-year period, only data from the 50 States were used. Data from these States between 1975 to 1984 yielded 500 observations for the model.

The independent variables were: an intervention variable indicating repeal of helmet use law, total number of motorcycle registrations, a series of 49 dummy variables for the States, and a series of 9 dummy variables for the 10 years. The dummy variables were incorporated in the model to control for State and year differences. Since motorcycle registrations could be considered to be a gross indicator of the economic "feasibility" of motorcycle travel, it was included as a control variable in the model.

In addition, a second model was developed. This model was identical to the first except that the motorcycle registration rate (per population between 14 and 64) replaced total number of motorcycle registrations.

Model and data sources

A general explanation of the analytic method follows. For more detail consult Kmenta (1971, pp. 509-511). Essentially, a two-step process using ordinary least squares (OLS) linear regression was used. First, OLS linear regression was applied to all 500 observations (50 States over 10 years). The residuals from this model were used to estimate the autocorrelation parameter for each State. The data were then transformed to remove autoregression. Using the transformed variables, a second OLS linear regression was run and yielded the estimated parameters.

Two regression models were tested. The first was specified as:

$$\begin{aligned}\text{RATE} = {} & \text{A} + \text{B} * \text{NOLAW} + \text{C} * \text{REGISTRATIONS} + \text{D1} * \text{STATE DUMMY}_1 \\ & +\ldots+ \text{D49} * \text{STATE DUMMY}_{49} + \text{E1} * \text{YEAR DUMMY}_1 +\ldots+ \\ & \text{E9} * \text{YEAR DUMMY}_9 + \text{ERROR TERM}\end{aligned}$$

The second regression model was identical to the first except that REGISTRATIONS was replaced by REGISTRATION RATE. This model was specified as:

$$\text{RATE} = \text{A} + \text{B} * \text{NOLAW} + \text{C} * \text{REGISTRATION RATE} + \text{D1} * \text{STATE DUMMY}_1 +\ldots+ \text{D49} * \text{STATE DUMMY}_{49} + \text{E1} * \text{YEAR DUMMY}_1 +\ldots+ \text{E9} * \text{YEAR DUMMY}_9 + \text{ERROR TERM}$$

In both models A is the constant term and B through E9 are the coefficients of the independent variables. The variables are described below.

RATE is the logarithm of the fatality rate (per accident). In the model, the logarithm was used because a multiplicative effect and not an additive effect for the law change was specified. That is, the weakening or repeal of the helmet use laws was interpreted as producing a percentage change, and not an additive one, in the dependent variable -- the fatality rate. Fatalities came from NHTSA's Fatal Accident Reporting System or FARS (NHTSA, annual) while the accident data came from MSF's annual report (MSF, annual). Alaska, Connecticut, and New Mexico had missing data in the 1975 and 1976 MSF fact sheets. These data were subsequently provided by the States (Lewis, 1986; Whitney, 1986; Graff, 1986, respectively).

REGISTRATIONS is the logarithm of motorcycle registrations while REGISTRATION RATE is the logarithm of the per capita registration rate. Motorcycle registrations were provided by the Federal Highway Administration or FHWA (FHWA, annual). The population data used to compute the registration rate were State population between 14 and 64 (Bureau of the Census, 1980, 1985). STATE DUMMYs are the series of 49 dummy variables that control for State-specific differences and YEAR DUMMYs the corresponding set of 9 dummy variables for year-specific differences.

NOLAW, the intervention variable representing the repeal of helmet use legislation, was constructed using the law dates and provisions in Appendix A. For each year, a State's NOLAW variable reflected the extent of coverage for those 18 years of age and older. For example, a value of 1 indicated no helmet coverage for those 18 and older, a value of 6/12 or 1/2 indicated that the State had helmet coverage for 6 months, and a value of 0 reflected coverage for the entire year.

Between 1975 and 1984, there were a few exceptions to the use of 18 as the age of "differentiation." Alaska and Delaware repealed their law for those 19 and older. Oklahoma used 21 as the cut-off for a brief period in 1975. The data used in the model, including the interpretation of the NOLAW variable, reflected these differences.

Utah, Nebraska, and Rhode Island had unique laws and were handled as follows. Until the middle of 1977 when its law was repealed, Utah had a helmet use law which only applied to riders on roads with speed limits 35 mph or greater. It was not possible to determine what proportion of motorcycle accidents occurred on such roads and convert this information to an appropriate value for the NOLAW variable. Therefore, Utah was treated as a NOLAW State. Prior to September 1977, Nebraska had a law but it was not enforced. Since not enforcing this law was probably equivalent to having no law, during this period Nebraska was treated as a NOLAW State. In 1976, Rhode Island repealed its helmet use law to cover only passengers. After this 1976 change, Rhode Island was treated as a NOLAW State.

Finally, some helmet use laws that covered those under 18 had additional provisions which pertained to those 18-and-older riders, for example, passengers (Alaska), holders of learner's permits (Wisconsin), and first-year novices (Ohio). It was not possible to determine the impact of these provisions on those 18 and older and use this information to determine a value for the NOLAW variable. Therefore, during the period in which such provisions were in effect, these States were treated as NOLAW States.

Results

Results from the model are contained in Table 5. First, both models fit the data very well, each with a multiple R-squared of 98%. As expected, the repeal of mandatory helmet use laws is associated with a statistically significant increase in the motorcycle fatality rate. As reported in Table 5, both models yield nearly identical results. That is, for both the first model (which has the logarithm of motorcycle registrations as an independent variable) and the second model (which has the logarithm of the registration rate as an independent variable) the coefficient associated with repeal is .193 (standard error = .048). Since both models are multiplicative, this coefficient, along with the lower (L95) and upper bound (U95) at the 95% confidence level, can be converted to percent change as follows:

L95 = (EXP[+0.193 - 1.96(.048)] - 1) x 100 = 10.4%
Point Estimate = (EXP[+0.193 + 0] - 1) x 100 = 21.3%
U95 = (EXP[+0.193 + 1.96(.048)] - 1) x 100 = 33.3%.

Therefore, the repeal of helmet use laws is associated with an increase of 10.4% to 33.3% in the fatality rate (per accident), other factors held constant.

What might have happened to motorcycle rider fatalities if these States had not repealed their helmet use laws? All other things being equal, if these States had not repealed their laws, the fatality rate for these States would have been 1 - 1/1.104 to 1 - 1/1.333 lower, or between 9.4% and 25.0% lower. Since it is unlikely that the presence or absence of a helmet use law would affect the number of motorcycle accidents, this 9.4% to 25.0% change in the fatality rate would be reflected in a decrease in the number of fatalities.

To continue with this hypothetical example, consider 1984 data. In 1984 there were 1,683 motorcycle rider fatalities in the States that repealed their helmet use laws (Louisiana was excluded because it re-enacted a helmet use law in 1982 and Oklahoma was excluded since its law for the beginning of 1975 was a partial law). Consequently, if use laws had been in effect for these States, there would have been between 158 and 420 fewer motorcycle rider fatalities in 1984.

To take this example a step further, there were 4,431 motorcycle rider fatalities in 1984 in all States. A reduction of 158 to 420 fatalities in the States that repealed their helmet use laws would produce a decrease between 3.6% and 9.5% in the 1984 national motorcycle rider fatalities.

Finally, the results from the OLS regression analysis reveal that correlated error terms exist for a substantial number of States. Consequently, it appears that the specification of an autocorrelated model for these pooled cross-section and time series data is appropriate.

Table 5

Regression Results

Independent Variable	Coefficient (Standard Error)	*t*-ratio
Model # 1:		
CONSTANT	-2.930 (1.275)	-2.3
NOLAW	0.193 (.048)	4.1
REGISTRATIONS	-0.165 (.077)	-2.1
Model # 2:		
CONSTANT	-6.341 (.379)	-16.7
NOLAW	0.193 (.048)	4.0
REGISTRATION RATE	-0.152 (.079)	-1.9

Note. The R^2 for each model was .98. In Model # 1 REGISTRATIONS is the logarithm of the total number of registered motorcycles while in Model # 2 REGISTRATION RATE is the logarithm of the motorcycle registration rate (based on population between 14 and 64). Coefficients for the State and year dummy variables are available on request.

References

Adams, J. G. U. (1983). "Public safety legislation and the risk compensation hypothesis: The example of motorcycle helmet legislation." *Environment and Planning C: Government and Policy*, *1*, pp. 193-203.

Bureau of the Census. (1980). *Estimates of the population of states, by age: July 1, 1971 to 1979*. (Current Population Reports, Population Estimates and Projections, Series P-25, No. 875). Washington, DC: U.S. Department of Commerce, Bureau of the Census.

Bureau of the Census. (1985). *State population estimates, by age and components of change: 1980 to 1984*. (Current Population Reports, Population Estimates and Projections, Series P-25, No. 970). Washington, DC: U.S. Department of Commerce, Bureau of the Census.

Campbell, D. T. and Stanley, J. C. (1963). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally College Publishing Company.

Chenier, T. C. and Evans, L. (1984). "Motorcyclist fatalities and the repeal of mandatory helmet wearing laws." (Research Publication GMR-4832). Warren, MI: General Motors Research Laboratories, Transportation Research Department.

Colburn, D. (June 1986). "Helmets: A matter of law-or choice?" *Washington Post Health, A Weekly Journal of Medicine*, pp. 10-11.

Cook, T. D. and Campbell, D. T. (1979). *Quasi-experimentation*. Chicago: Rand McNally College Publishing Company.

Federal Highway Administration. (annual). *Highway statistics series*. (Tables MV-1 and MV-1A). Washington, DC: U.S. Department of Transportation, Federal Highway Administration.

Graham, J. D. and Lee, Y. (in press). "Behavioral response to safety regulation: The case of motorcycle helmet-wearing legislation." *Policy Sciences*.

Graff, H. (June 23, 1986). Personal communication.

Kmenta, J. (1971). *Elements of econometrics*. New York: Macmillan Publishing Co., Inc.

Lewis, M. (June 23, 1986). Personal communication.

Motorcycle Safety Foundation. (annual). *Cycle safety info. Motorcycle statistics*. Costa Mesa, CA: Motorcycle Safety Foundation.

References (cont'd)

National Highway Traffic Safety Administration. (annual). Fatal Accident Reporting System. Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration.

National Highway Traffic Safety Administration. (1980). A report to congress on the effect of motorcycle helmet use law repeal -- a case for helmet use. Washington, DC: U.S. Department of Transportation, National Highway Traffic Safety Administration.

Whitney, R. (June 26, 1986). Personal communication.

Appendix A

Motorcycle Safety Helmet Use Laws: The Original Law and Subsequent Changes

State	--- Original Law---		---Subsequent Changes---		
	Date	Coverage		Date	Coverage
Alabama	11-6-67	All			
Alaska	1-1-71	All		7-1-76	19, P
Arizona	1-1-69	All		5-27-76	18
Arkansas	7-10-67	All			
California	1-1-85	15 1/2			
Colorado	7-1-69	All		5-20-77	No law
Connecticut	10-1-67*	All		6-1-76	No law
Delaware	10-1-68	All		6-10-78	19, C
District of Columbia	10-12-70	All			
Florida	9-5-67	All			
Georgia	8-31-66	All			
Hawaii	5-1-68	All		6-7-77	18
Idaho	1-1-68	All		3-29-78	18
Illinois	1-1-68**	All		6-17-69	No law
Indiana	7-1-67	All	(1)	9-1-77	No law
			(2)	6-1-85	18
Iowa	9-1-75	All		7-1-76	No law
Kansas	7-1-67	All	(1)	3-17-70	21
			(2)	7-1-72	All
			(3)	7-1-76	16
			(4)	7-1-82	18
Kentucky	7-1-68	All			
Louisiana	7-31-68	All	(1)	10-1-76	18
			(2)	1-1-82	All
Maine	10-7-67	All	(1)	10-24-77	No law
			(2)	7-3-80	15, L, N
Maryland	9-1-68	All		5-29-79	18
Massachusetts	2-27-67	All			
Michigan	3-10-67	All	(1)	6-12-68	No law
			(2)	9-1-69	All
Minnesota	5-1-68	All		4-6-77	18
Mississippi	3-28-74	All			
Missouri	10-13-67	All			
Montana	7-1-73	All		7-1-77	18
Nebraska	5-29-67***	All		9-1-77	No law
Nevada	1-1-72	All			
New Hampshire	9-3-67	All		8-7-77	18
New Jersey	1-1-68	All			
New Mexico	5-1-67	18, P	(1)	7-1-73	All
			(2)	6-17-77	18
New York	1-1-67	All			
North Carolina	1-1-68	All			
North Dakota	7-1-67	All		7-1-77	18

ppendix A (cont'd)

	--- Original Law---			---Subsequent Changes---	
State	Date	Coverage		Date	Coverage
Ohio	4-2-68	All		7-10-78	18,N
Oklahoma	4-27-67	All	(1)	4-7-69	21
			(2)	2-5-75	All
			(3)	5-3-76	18
Oregon	1-1-68	All		10-4-77	18
Pennsylvania	9-13-68	All			
Rhode Island	6-30-67	All		5-21-76	P
South Carolina	7-1-67	All		6-16-80	No law
South Dakota	7-1-67	All		7-1-77	18
Tennessee	6-5-67	All			
Texas	1-1-68	All		9-1-77	18
Utah	5-13-69	35 mph		5-8-77	18
Vermont	7-1-68	All			
Virginia	1-1-71	All			
Washington	7-1-67	All		7-1-77	No law
West Virginia	5-21-71	All			
Wisconsin	7-1-68	All		3-19-78	18, L
Wyoming	5-25-73	All		5-27-83	18

Note. Coverage is abbreviated as follows:

All = helmet law covers all

No law = no helmet use law

15, 15 1/2, 16, 18, 19, 21 = age under which coverage is required

35 mph = helmets required on roads with speed limit of 35 mph or higher

C = helmet law requires that a helmet be carried on the motorcycle for those 19 years and older

L = helmet use law covers holders of learner's permits

N = helmet use law covers novices

P = helmet use law covers passengers

* not enforced until 2-1-74

** law declared unconstitutional by State Supreme Court on 5-28-69

*** law never enforced

U.S. Department
of Transportation
National Highway
Traffic Safety
Administration

DOT HS 807 416
NHTSA Technical Report

March 1989

The Effectiveness of Motorcycle Helmets in Preventing Fatalities

This document is available to the public from the National Technical Information Service, Springfield, Virginia 22161.

Technical Report Documentation Page

1. Report No. DOT HS 807 416	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle The Effectiveness of Motorcycle Helmets in Preventing Fatalities		5. Report Date March 1989
		6. Performing Organization Code
7. Author(s) Donna C. Wilson		8. Performing Organization Report No.
9. Performing Organization Name and Address Mathematical Analysis Division, NRD-31 National Center for Statistics and Analysis 400 7th St. S.W. Washington, D.C. 20590		10. Work Unit No. (TRAIS)
		11. Contract or Grant No.
12. Sponsoring Agency Name and Address Research and Development National Highway Traffic Safety Administration 400 7th St. S.W. Washington, D.C. 20590		13. Type of Report and Period Covered NHTSA Technical Report 1982 - 1987
		14. Sponsoring Agency Code

15. Supplementary Notes

16. Abstract

Based on data from 1982 through 1987 FARS, motorcycle helmets are estimated to be 29% effective in preventing fatalities. A matched-pairs technique was used to produce the effectiveness estimates of motorcycle helmets by comparing the probability of fatalities of drivers and passengers under helmeted and unhelmeted conditions. The general methodology employed in this analysis has been utilized in numerous reports to estimate the effectiveness of various restraint systems, for example, Evans and Frick (1988) and Partyka (1988).

17. Key Words helmet, motorcycle, fatalities driver, passenger	18. Distribution Statement Document is available to the public through the National Technical Information Service, Springfield, Virginia, 22161

19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 8	22. Price

Form DOT F 1700.7 (8-72)

Reproduction of completed page authorized

THE EFFECTIVENESS OF MOTORCYCLE HELMET USE IN REDUCING FATALITIES

Donna C. Wilson

SUMMARY

Based on data from NHTSA's Fatal Accident Reporting System (FARS), helmets are estimated to be 27% effective in preventing driver fatalities and 30% effective in preventing passenger fatalities in crashes in which both a motorcycle driver and a passenger were involved. On average, helmets are estimated to be 29% effective in reducing fatalities in motorcycle crashes, which is an average of driver and passenger effectiveness. For the years 1982 through 1987, it is estimated that 4,645 motorcyclists' lives were saved as a result of helmet usage. In total, if all motorcylists had worn helmets, both drivers and passengers, an estimated 9,030 lives could have been saved over this six year period.

BACKGROUND AND METHODOLOGY

To calculate helmet effectiveness and estimate the number of lives saved by helmet usage, a matched-pairs procedure was employed. In this procedure, the ratio of driver fatalities to passenger fatalities, and passenger fatalities to driver fatalities, are calculated for each of four possible helmet use groups (i.e. both driver and passenger helmeted; both driver and passenger unhelmeted; driver helmeted and passenger unhelmeted; and driver unhelmeted and passenger helmeted). These ratios were calculated for each year individually (1982 through 1987) and for all years combined. Collectively, they provide the basic data used to assess the effectiveness of helmets in preventing fatalities.

This same general procedure has been used previously by Evans (1984)[1], Evans and Frick (1988)[2], Kahane (1986)[3] and Partyka (1988)[4,5] to estimate the effectiveness of various restraint systems. Evans and Frick also used the procedure to assess the effectiveness of motorcycle helmets in reducing fatalities. A complete explanation of the analytic technique can be found in their paper. A brief example of the technique is provided below:

> In total, there were 1,610 driver fatalities and 1,427 passenger fatalities in crashes involving both an unhelmeted driver and an unhelmeted passenger. The fatality ratio for these crashes is:
>
> $$1{,}610/1{,}427 = 1.128$$
>
> Thus, about 11 motorcycle drivers are killed for every 10 passengers killed in crashes in which both are unhelmeted.
>
> There were also 168 driver fatalities and 197 passenger fatalities in crashes involving a helmeted driver and an unhelmeted passenger. The fatality ratio for these crashes is:
>
> $$168/197 = 0.853$$

In other words, about 9 drivers are killed for every 10 passengers killed in crashes in which the driver was helmeted, but the passenger was not.

Assuming that helmet use of the driver accounts for the reduction in fatality ratios (1.128 to 0.853), an estimate of the effectiveness of helmets is calculated as:

$$\frac{(1.128-0.853)}{1.128} * 100 = 24\%$$

By interpreting these odds as fatality rates, helmets are estimated to be 24% effective in preventing driver fatalities in motorcycle accidents when examining total fatalities and helmet usage from 1982 through 1987. In comparison, an estimate of the effectiveness of helmet use in preventing passenger fatalities can be obtained by comparing the fatality ratio of unhelmeted passengers to unhelmeted drivers (0.886) to the fatality ratio of the helmeted passengers to unhelmeted drivers (0.590) (using the former as the base). This produces an effectiveness estimate of 33%.

The matched-pairs method used in this analysis assumes that the only factor causing the reduction in fatalities in these fatal crashes is helmet usage. Another possible shortcoming of the technique is its limitation to motorcycle crashes involving both a driver and a passenger on the same vehicle in which one or both were killed. These fatal crashes represent only a small portion of total motorcycle fatalities.

RESULTS

The number of driver and passenger fatalities in motorcycle crashes and the corresponding fatality ratios for each helmet use group is shown in Table 1 for each year (1982 through 1987), as well as the total for all years. As can be seen, the number of fatalities in each of these years is not distributed equally among the four groups of occupants. The greatest number of deaths occur in crashes where neither the driver nor the passenger are wearing a helmet. The next greatest number occurs when both the driver and the passenger are helmeted. In examining the data, it is evident there is a consistency in helmet usage patterns between the driver and the passenger, such that when the driver is helmeted so tends to be the passenger. This is also true when the driver is unhelmeted. Thus, on the average, approximately 58% of the deaths occur when there is no helmet usage; 32% of the deaths occur when both driver and passenger are helmeted; 7% when the driver is helmeted and the passenger is unhelmeted and 4% of the deaths occur when the driver is unhelmeted and the passenger is helmeted.

The estimates of effectiveness derived from this data may be affected by the small number of deaths in these latter two categories. The variety of estimates produced by a single year's data indicates the sensitivity of the estimates to the sample size. However, even though the results within the analysis reflect a fluctuation from year to year due to these differences, overall averages from year to year show that there is reliability in the data since a number of the years produce an average of or near 29%.

TABLE 1
DRIVER/PASSENGER FATALITIES IN MOTORCYCLE CRASH INVOLVEMENTS*
BY HELMET USE STATUS
1982-1987

	Helmet Used		Number of Deaths		Drivers/	Passengers/
	Driver	Passenger	Driver	Passenger	Passengers	Drivers
1982	No	No	297	237	1.253	0.798
	No	Yes	19	15	1.267	0.789
	Yes	No	37	44	0.841	1.189
	Yes	Yes	183	155	1.181	0.847
1983	No	No	263	224	1.174	0.852
	No	Yes	25	12	2.083	0.480
	Yes	No	24	31	0.774	1.292
	Yes	Yes	160	131	1.221	0.819
1984	No	No	243	232	1.047	0.955
	No	Yes	21	13	1.615	0.619
	Yes	No	30	36	0.833	1.200
	Yes	Yes	147	123	1.195	0.837
1985	No	No	265	236	1.123	0.891
	No	Yes	17	9	1.889	0.529
	Yes	No	31	36	0.861	1.161
	Yes	Yes	144	143	1.007	0.993
1986	No	No	263	247	1.065	0.939
	No	Yes	20	12	1.667	0.600
	Yes	No	26	31	0.839	1.192
	Yes	Yes	158	125	1.264	0.791
1987	No	No	279	251	1.112	0.900
	No	Yes	20	11	1.818	0.550
	Yes	No	20	19	1.053	0.950
	Yes	Yes	125	102	1.225	0.816
Total	No	No	1,610	1,427	1.128	0.886
	No	Yes	122	72	1.694	0.590
	Yes	No	168	197	0.853	1.173
	Yes	Yes	917	779	1.177	0.850

*Crash must involve both a driver and a passenger on the same motorcycle.

Presented in Table 2 are the calculated effectiveness rates of both driver and passenger for each year, and the averages for all years, using the data presented in Table 1.

TABLE 2
HELMET USE EFFECTIVENESS (PERCENT)
FOR MOTORCYCLE DRIVERS AND PASSENGERS
1982-1987

Effectiveness for	Control	1982	1983	1984	1985	1986	1987	Total
Driver:	Unhelmeted passenger	33	34	20	23	21	05	24
	Helmeted passenger	07	41	26	47	24	33	31
Passenger:	Unhelmeted driver	01	44	35	41	36	39	33
	Helmeted driver	29	37	30	14	34	14	28
Driver:	Average	20	38	23	35	23	19	27
Passenger:	Average	15	40	33	28	35	26	30
Both:	Unhelmeted control	17	39	28	32	29	22	29
	Helmeted control	18	39	28	31	29	23	29
Both:	Average	17	39	28	31	29	23	29

As can be seen, driver effectiveness estimates range from 5% to 47%, while passenger estimates range from a low of 1% to a high of 44%. Much of this variation is likely due to the small number of occupants in those groups where only one occupant is helmeted. On average, the estimated effectiveness of helmets in preventing driver fatalities for all years considered in this analysis is 27%. The corresponding estimate for passengers is 30%. All averages for drivers and passengers, as well as, unhelmeted and helmeted controls were computed by using straight averages.

The number of crashes involving small children was also examined to ascertain the degree to which helmet effectiveness estimates were influenced by the presence of small children. There were only 31 small children under the age of six involved in these crashes. Analyses that excluded young children indicated that the helmet effectiveness estimates are not sensitive to the inclusion of children under six or children under thirteen.

ESTIMATED LIVES SAVED BY HELMET USE

Assuming that the estimated effectiveness rates are applicable to all motorcycle fatalities, estimates of the number of lives saved and the number of potential lives that could have been saved can be calculated. A complete explanation of the methodology employed in this section can be found in Partyka (1988). Listed in Table 3 are motorcycle fatalities by helmet use for the years 1982 through 1987. Unknown helmet use has been prorated between known use categories.

TABLE 3
MOTORCYCLE FATALITIES BY HELMET USE STATUS
1982-1987

	FATALITIES		
Year	Helmeted	Unhelmeted	Total
1982	2,002	2,451	4,453
1983	1,805	2,460	4,265
1984	2,003	2,605	4,608
1985	1,933	2,631	4,564
1986	1,989	2,577	4,566
1987	1,640	2,391	4,031
Total	11,372	15,115	26,487

By applying the overall average effectiveness rate of 29% to the helmeted fatality counts, the number of lives saved by helmet usage can be estimated. The formula is as follows:

$$\text{Lives Saved} = \text{Helmeted Fatalities} * \frac{\text{Helmet Use Effectiveness}}{1 - \text{Helmet Use Effectiveness}}$$

For example, there were a total of 2,002 helmeted fatalities in 1982. The above formula is applied as follows:

$$2{,}002 * \frac{.29}{1 - .29} = 818$$

Thus it is estimated that 818 lives were saved by helmet usage in 1982.

The results for 1982-1987 are shown in Table 4.

TABLE 4
ESTIMATED LIVES SAVED BY HELMET USAGE
1982-1987

Year	Estimated Lives Saved
1982	818
1983	737
1984	818
1985	790
1986	812
1987	670
Total	4,645

This procedure estimates that during 1982 through 1987, helmet usage saved 4,645 lives in fatal motorcycle crashes.

POSSIBLE LIVES THAT COULD HAVE BEEN SAVED BY HELMET USE

More lives could have been saved if all motorcyclists had been wearing helmets. Estimates of the number savable are calculated each year from total fatalities (Table 3), the number of lives saved (Table 4) and overall helmet use effectiveness (Table 2) in the following formula:

Lives That Could Have Been Saved =

(Total Fatalities + Lives Saved) * Helmet Use Effectiveness

The following example shows the number of lives which could have been saved in 1982 if all motorcyclists had worn helmets. There were a total of 4,453 fatalities in 1982 and an estimated 818 lives that were saved by helmet usage. Using the same 29% effectiveness rate, the calculation is:

(4,453 + 818) * .29 = 1,529

Thus, if the unhelmeted fatalities had also been wearing helmets, it is estimated that a total of 1,529 lives could have been saved. Table 5 shows lives of all motorcyclists that could have been saved from 1982 to 1987.

TABLE 5
ESTIMATES OF LIVES SAVABLE BY HELMET USAGE
1982-1987

Year	Potential Lives
1982	1,529
1983	1,451
1984	1,574
1985	1,553
1986	1,560
1987	1,363
Total	9,030

Thus, an estimated 9,030 lives could have been saved as a result of helmet use from 1982 to 1987.

In summary, although the effectiveness of helmet use depends on many factors (e.g. driver age, speed, crash direction) and the matched-pairs technique has limitations in assessing effectiveness, motorcycle helmets are estimated to be 29% effective in preventing motorcycle rider fatalities. Further, although motorcycle helmets saved an estimated 670 lives in 1987, they could have prevented an additional 693 fatalities if 100% of motorcycle riders wore helmets.

REFERENCES

1. Evans, Leonard. "Driver Fatalities vs. Car Mass Using a New Exposure Approach: Accident Analysis and Prevention", U.S. Department of Transportation, National Highway Traffic Safety Administration, Volume 16, Number 1, 1984.

2. Evans, Leonard and Frick, Michael. "Helmet Effectiveness in Preventing Motorcycle Driver and Passenger Fatalities: Accident Analysis and Prevention", U.S. Department of Transportation, National Highway Traffic Safety Administration, Volume 20, Number 6, 1988.

3. Kahane, Charles. "An Evaluation of Child Passenger Safety: The Effectiveness and Benefits of Safety Belts", U.S. Department of Transportation, National Highway Traffic Safety Administration, DOT HS 806 890, February 1986.

4. Partyka, Susan. "Papers on Adult Seat Belt Effectiveness and Use", U.S. Department of Transportation, National Highway Traffic Safety Administration, DOT HS 807 285, June 1988.

5. Partyka, Susan. "Lives Saved by Child Restraints from 1982 Through 1987", U.S. Department of Transportation, National Highway Traffic Safety Administration, December 1988.

Senator **Moynihan**. There is another point here. I get a little nervous about some of these figures of how much money gets saved. Some of this data makes me nervous. How much money would be saved if you weren't born.

I mean, think of all the hospital costs that would not be incurred. But on deaths as against injuries, I think if I could say to my distinguished colleague, I think the first and maybe only piece of data analysis I have ever done was in 1958, when the National Safety Council, which was then a sort of obstacle to highway safety, not intentionally, but they knew a great many things which were dead wrong and nothing was going to change their minds—and they used to make great rewards to States that did good on various standards, they would rate people. And in terms of highway deaths per 100,000 miles, Port, Nevada, represented by Senator Reed, always came in last. It had the worst record in the country. This interested me and I was wondering what was wrong with people in Nevada. I happened to notice that the place with the lowest number of fatalities per 100,000 miles was the District of Columbia. Then it occurred to me that maybe the rate of motor vehicle deaths was a function of how many blocks it was to a hospital emergency room, rather than the behavior of the drivers. Then you turn it around, and then see what was the injury ratio, and it was just the opposite. The District of Columbia had the highest rate of injuries and Nevada had the lowest. I began to then think that all this was a function of vehicle density on highways. If we could have some of that analysis, we could better determine what is the real source of the leveling off that Senator Chafee has described at about 47,000 deaths.

Doctor Anzinger, is it just possibly a function that hospital emergency rooms just do a better job today?

Dr. **Anzinger**. I do think there is a rural issue that is in the literature and that is documented that——

Senator **Moynihan**. I mean just trauma. You could come in in the same condition today and where 30 years ago you would die, today you survive.

Dr. **Anzinger**. I would hope that would be a true statement.

Senator **Moynihan**. So if we want to look at things like injuries and think of death as the far end of that spectrum, have injuries rates changed very much?

Dr. **Anzinger**. They do change. They change with the speed limit. They change with protection, certainly. In fact, in terms of motorcycle helmets, we have noticed that when Department of Transportation funds were at one time tied to helmet usage, the rate when down. And when that was untied in 1976, the injuries went up by some 30 to 40 percent.

Senator **Moynihan**. Doctor Valenziano, we welcome you. We are running a little bit behind, so I am going to ask you to stay to 5 minutes so we can move on.

STATEMENT OF CARL P. VALENZIANO, DIRECTOR, TRAUMA SERVICES, BAY STATE MEDICAL CENTER, SPRINGFIELD, MA, REPRESENTING THE AMERICAN TRAUMA SOCIETY AND THE AMERICAN COLLEGE OF SURGEONS

Dr. **Valenziano**. Mr. Chairman, Senator Chafee, members of the subcommittee, I am Carl Valenziano, fellow of the American College of Surgeons, and I am Director of Trauma Services at Bay State Medical Center in Springfield, Massachusetts. We are a 900 bed hospital, the western campus of Tuft's School of Medicine. We are a Level I trauma center and treat approximately 1,000 patients each year, covering western Massachusetts, Connecticut, New York, and Vermont. We see approximately 80 percent blunt trauma—which is the type you see with motor vehicle crashes.

I am pleased to appear before you today on behalf of the American Trauma Society and the American College of Surgeons. Both organizations share a deep interest in furthering efforts to prevent injury and we strongly support S. 1007, the National Highway Fatality and Injury Reduction Act of 1989.

To review the basics—I'm sure they have already been reviewed, but nonetheless—injury is the leading cause of death between the ages of 1 and 44. Injury causes more death than all other reasons combined between the ages of 1 and 34. And motor vehicle crashes are the number 1 cause of death in the United States from the ages of 1 and 30—50,000 dead and 150,000 permanently disabled, mostly due to head and spinal cord injury.

There are more pre-retirement years lost from injury than cancer, stroke, heart attacks combined with the victims being young, just entering the workforce, and predominantly male. A double effect there, many years of costly care and family disfunction while——

Senator **Moynihan**. Doctor. You are speeding.

Dr. **Valenziano**. I am sorry, sir. I have some numbers I would like to try and get through here.

Senator **Moynihan**. Take your time.

Dr. **Valenziano**. Then I will take seven minutes.

Senator **Moynihan**. Hold it to 55.

Dr. **Valenziano**. What is the reason behind wanting to mandate helmet use. Historically, between 1966 and 1975, 47 States had the requirement and the death rate decreased 100 percent. Between 1975 and 1983, 23 States repealed it and the mortality increased 40 percent. The recent study of McSwain and Belles has shown that repeal has caused use to go from 99 percent down to 50 percent. However, with reinstatement of a helmet law, the usage went up to 95 percent once again.

In the comparison of helmet use versus non-helmet use in mortality, the mortality rate per 1,000 registered motorcycles is 1.6 with helmet use versus a 6.2 without helmet use. The length of stay in the hospital after injury, which is reflective of the injury severity, is 5.8 days with helmet. It is more than double, 11.8 days, without helmet use. In the number of days of disability after discharge from the hospital, compared from State to State in a multi-State study, it was 26.7 days with helmet use and 51.1 days without helmet use. The risk of death without a helmet is increased about

1.5 times. But the risk of head injury—not death—is more than 2 times increased without a helmet.

I submit this particular helmet as proof of the ability of helmets to help withstand impact. I personally have many, many stories which, because of time, we could not go into right now; but this particular person was kept in the hospital overnight because I could not believe there was nothing wrong with him. He struck the ground at approximately 60 miles an hour.

The cost of injury——

Senator MOYNIHAN. Will you hold up once again, please, Doctor. He hit the ground at what speed?

Dr. VALENZIANO. We're guessing around 60 miles an hour. He did not lose consciousness, but he was traveling somewhere between 50 and 60 miles per hour, he told us. He struck and landed directly on his head and these were found in separate pieces. As I said, we kept him in hospital just because we could not believe there was absolutely nothing wrong with him. Sure enough, there wasn't.

Senator MOYNIHAN. Who makes that helmet?

Dr. VALENZIANO. These were all the pieces they could find.

The cost—looking at Louisiana—from injuries of motorcycle crashes between 1981 and 1987 actually decreased 50 percent when the law was put into effect in 1982. The length of stay in hospital from injuries decreased 37 percent, and the patient numbers that stayed over 20 days actually went down 80 percent. The cost State to State from injuries from motorcyclist with helmets versus those without was 300 percent higher in the States with no helmet law.

Turning to seat belts. It is even more dramatic because there we have the belted versus the unbelted in the same vehicle. Horrible low speed injuries. A teenage girl impaled on the gear shift lever while the folks who were belted absolutely had not a bruise. A young father thrown from a pick up in a low speed accident, which the folks in the other car, belted, had no idea that anyone could even possibly be injured in that particular accident, and he died a few hours later.

Just this past weekend, I had a patient whose car spun out, essentially no damage to the vehicle, a permanent spinal injury to the person from being thrown within the vehicle.

This is borne out by the study from the University of Tennessee showing that those folks without seat belts are more often hospitalized—some 59 percent versus 26 percent of those who are belted—and they suffer more serious injuries, greater length of stay, and greater than 200 percent higher costs. Those costs apparently, by looking at the profiles, are more likely to be unreimbursed. NHTSA alone showed that related to seat belt and helmet use alone, there could have been 12,000 lives that might not have been lost, 437,000 injuries may have been avoided, with a cost attached of approximately $7 billion.

A study in Seattle also showed that approximately 64 percent of the acute and rehabilitation costs of these patients come from public funds. Most of those patients are uninsured. The cost to trauma centers is $1 to $3 million a year. This unreimbursed cost used to be passed on, but with our reimbursement system we cannot do so now. Nearly 25 designated trauma centers closed their doors in the last few years because they could no longer sustain increasing losses.

Clearly there are ways for us to help the burden that is on the medical system today, both by the cost of the injury and the long-term care of those patients. But the single most cost-effective step that can be taken is to mandate wearing seat belts and using helmets. Not wearing a seat belt or a motorcycle helmet, I am afraid is not a private decision, although I personally understand the desire of not wearing a belt or a helmet. But the cost in health care, rehabilitation, chronic care, the cost to families, futures, lives spent uselessly makes the decision to wear a seat belt or a motorcycle helmet not a private one.

We are in great support of S. 1007 for it offers a carrot and a stick—of providing the incentives to mandate use, but provides additional funding for enforcement and public awareness efforts. These will enhance the use rate and are especially strong points of that bill.

The American Trauma Society and the American College of Surgeons commends you, Mr. Chairman, for your strong support of S. 1007; and we commend Senator Chafee for his personal commitment to reducing death, disability, and the escalating health care costs that threaten the public's access to definitive care.

Thank you for the opportunity to appear before you today. I would be pleased to answer any questions. I am sorry I am late.

Senator MOYNIHAN. Not at all, Doctor.

Senator Chafee.

Senator CHAFEE. I thank each of the witnesses. We have had a chance to question them before Doctor Valenziano arrived and we want to thank him for his testimony. There is a man right in the front lines, as is Doctor Anzinger, and has seen what results from these horrible injuries. Again, I want to lay the stress on the injuries, which are so often overlooked as we talk death rates. I think it is the injuries that prompt me to be so enthusiastic and vigorous in connection with this legislation.

Thank you.

Senator MOYNIHAN. Senator Jeffords.

Senator JEFFORDS. Doctor Valenziano, Massachusetts just repealed their seat belt law, did they not?

Dr. VALENZIANO. Yes.

Senator JEFFORDS. And were they aware of the facts that you presented here?

Dr. VALENZIANO. I cannot speak for all of those who voted for or against it. I think that knowledge of numbers alone may not necessarily convey the hardships that go along with the injuries, the true costs of what those injuries are. I don't believe people understand the ramifications they have.

Senator JEFFORDS. Then better, if they don't understand, to put our effort in education rather than trying to mandate people to do things to protect themselves. Wouldn't it be better if we just struck the sanction part of this bill and to give the incentives to the States for education and to make them aware of the benefits of helmet laws. Doesn't it sort of build up a natural resistance and rebellion—apparently from the Massachusetts vote—by ordering people to do something. Wouldn't it be better to put the efforts into education?

Dr. VALENZIANO. One may think that it would cause a rebellion, but I think that in something as straight forward as wearing a safety belt or a helmet, the "it is never going to happen to me" phenomenon goes away once it happens to you—however, many of these people are never fully aware of it for many years thereafter. I think that truly public education campaigns must be part of this. But just to say that it is good for you doesn't mean that it shouldn't be mandated. The cost is too high not to do it.

Senator MOYNIHAN. May I just suggest Senator Jeffords that what you're involved in here with these reactions is essentially the attractions of risktaking. For part of the population that Doctor Anzinger and Doctor Valenziano are talking about, to demonstrate that there is a high risk involved in driving a motorcycle without a helmet makes it attractive not unattractive. You know, at age 18 people do things which they usually stop doing by age 38, if they are still alive. To demonstrate where risk is involved—ask President Reagan, he——

Senator JEFFORDS. I can see we are going to have a good time arguing this out as time goes by.

Senator MOYNIHAN. Well, he rodeos and rodeos are nothing but risk taking.

Thank you very much. We do appreciate each and all of your testimony. Doctor Campbell, you are going to dig up some numbers for us, which we will certainly appreciate getting.

Now we are going to hear from persons who are professionally associated with the subject. Our panel consists of Mr. Brian O'Neill, who is President of the Insurance Institute for Highway Safety, one of the pioneering organizations of its kind; Doctor David Viano, who is President of the Association for the Advancement of Automotive Medicine; Doctor Ralph Hingson, who is Chief of the Social and Behavioral Sciences Department at the Boston University School of Public Health; and finally, Mr. Robert Ford, the Chairman of Massachusetts Freedom First, from Swampscott, Massachusetts.

Mr. O'Neill, we welcome you sir, and will you proceed.

STATEMENT OF BRIAN O'NEILL, PRESIDENT, INSURANCE INSTITUTE FOR HIGHWAY SAFETY

Mr. O'NEILL. Thank you, Mr. Chairman, members of the committee. What I would like to do is just summarize my testimony and ask that the complete testimony be entered into the record.

Senator MOYNIHAN. Would you do that. We are going to have to be considerate of our remaining witnesses. We have more witnesses today than we probably ought to have done and to make sure that each of them has a chance to speak, we will keep everybody to five minutes. Thank you, Mr. O'Neill. Everybody's statements will be put in the record. And you proceed exactly as you wish.

Mr. O'NEILL. Mr. Chairman, one thing there is no question about is the fact that lap/shoulder belts and motorcycle helmets, when they are worn, save lives and prevent injuries. The problem we are dealing with is that neither lap/shoulder belts nor motorcycle helmets are used enough on a voluntary basis. I must say that educational approaches to this problem have failed, not just in the United States but around the world. For decades, we have been trying to educate the public about the benefits of lap/shoulder belts and motorcycle helmets in preventing deaths and serious injuries. I think there is no question now that the bulk of the public in the United States and other countries understand that indeed these features do prevent deaths and prevent injuries.

We face the problem that too many people who are driving cars and riding motorcycles believe that the crash is going to involve someone else and not them. We all believe that when we get behind the wheel of a car or ride a motorcycle that the accident or crash is not going to involve us; it is going to involve someone else. I think this is one of the reasons that we have failed to convince the public that they should buckle up and wear motorcycle helmets on a voluntary basis.

Around the world laws have been adopted as the answer to this problem. The United States has been slow in developing seat belt use laws. New York was the first State to enact such a law in 1985; it was followed by New Jersey. We now have laws in 34 States and the District of Columbia, but we haven't done a very good job yet of getting compliance as high as it should be and as high as it is in many other countries. In large part, that is because we have weak laws in many States. Of the belt use laws in effect in the United States, only eight States provide for primary enforcement—which means the police may issue tickets solely for failing to use belts—and in the other 26 States and the District of Columbia, secondary enforcement is in effect—the police have to stop motorists for other violations before they can enforce the safety belt law. The problem there is that usage is not as high in those States as it is where primary enforcement is permitted.

Helmet laws were enacted in the United States before safety belt use laws. By 1973 all but three States had mandated that cyclists wear helmets. However, Illinois repealed its law in 1970, and by 1980, 28 more States had abandoned or substantially weakened their laws. Now only 22 States and the District of Columbia have helmet use laws that apply to all riders. There are 24 more States with laws that require helmet use by riders younger than specified ages, usually 18, but these laws have problems that are similar to those of safety belt use laws with secondary enforcement—they are hard to enforce and compliance rates are poor. Compliance rates with helmet laws that apply to all riders is near 100 percent.

The death and injury reducing benefits of these laws are impressive. Texas A&M researchers estimated that the universal helmet law in effect in that State from 1968 to 1977 saved 650 lives. So it is good news that just last month Texas reinstated a helmet law that applies to all riders. It is too early to count the number of lives being saved by this law or injuries being prevented, but at the Insurance Institute for Highway Safety we have new research indicating that helmet use rates more than doubled in Texas in the month after reinstatement. Driver helmet use increased from 42 percent in August of this year to 91 percent in September.

Passenger helmet use increased from 32 percent to 76 percent during the same time period. These huge increases occurred even though the Texas Department of Public Safety announced that most offenders would only get warnings during the first few months of the law while these surveys were being conducted.

Clearly, one way to get State legislatures to enact helmet and safety belt use laws is to threaten to withhold highway funds to States that fail to do so. In the case of helmet laws, such sanctions were tried in 1973 and by 1975 legislatures in every State except California, Illinois, and Utah had enacted helmet laws. But when the Department of Transportation moved to impose those sanctions on these three holdout States so they would actually lose their Federal funds, Congress withdrew the authority to impose sanctions. The Federal effort thus collapsed and many States subsequently abandoned or substantially weakened their motorcycle helmet use laws. On the other hand, during the more recent push for the 21-year-old alcohol purchasing age in every State, the threat of Federal sanctions worked. All 50 States now have a legal minimum purchase age for alcohol of 21. So I guess history tells us that Federal sanctions are problematic—sometimes they work, other times they don't.

Federal incentives—the carrot as opposed to the stick—may be problematic, too. Congressional action in 1973 allowed the U.S. Department of Transportation to increase Federal Highway Safety grants to States by up to 25 percent if a safety belt use law was passed. The result wasn't heartening. Only Puerto Rico passed such a law.

There is no question that laws requiring helmet use, safety belt use, or measures aimed at alcohol impaired driving are essentially up to the States. That doesn't mean, however, there shouldn't be Federal involvement in such programs. Quite the contrary, the evidence is clear that without Federal involvement, many important State safety laws wouldn't be on the books. They ought to be on the books for reasons of both public safety and economics. When people are injured because they aren't using a safety belt or a motorcycle helmet, they rarely pay their own medical and rehabilitation bills. Rather, insurance companies and the government pay. This, in turn, leads to higher insurance and other costs. So using helmets and belts isn't simply a freedom of choice issue. It is an issue that affects virtually everyone.

Whatever action the Federal Government can take to encourage States to adopt safety belt and motorcycle helmet use laws should be taken as soon as possible. Such laws should require all motorcyclists to use helmets and should provide for primary enforcement in safety belt laws.

And, yes, there is the question of freedom. There is a loss of freedom with safety belt use laws and helmet use laws. But I believe that is a very small price to pay for the lives saved and debilitating injuries prevented. Should we trade these lives and injuries for the freedom to drive unbelted and ride motorcycles unhelmeted? I think not.

Thank you, Mr. Chairman.

Senator MOYNIHAN. We thank you, Mr. O'Neill.

Now we have Doctor Viano. Good morning.

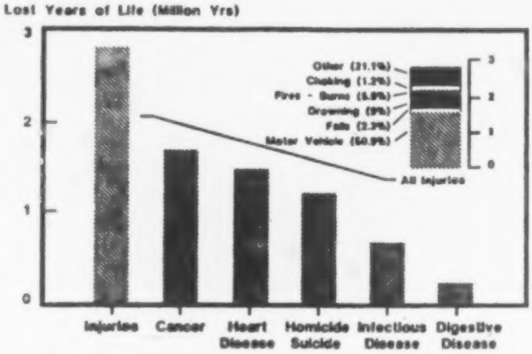
STATEMENT OF DAVID C. VIANO, PRESIDENT, THE ASSOCIATION FOR THE ADVANCEMENT OF AUTOMOTIVE MEDICINE AND TREASURER OF THE NATIONAL HEAD INJURY FOUNDATION, SOUTHBOROUGH, MA

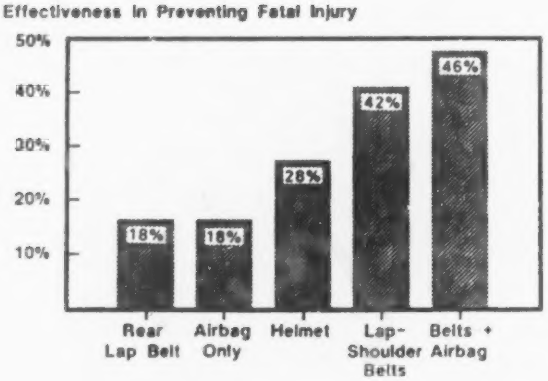
Dr. VIANO. Thank you very much. It might be interesting for you to know why a researcher in automotive safety has become such an advocate of injury prevention. Within my own research, I have become a spokesman for public health in the area of motor vehicle safety. It came about because of what Senator Chafee mentioned, and that is I kept looking at the statistics of the annual fatalities, that's how we gage success and failures. However, I was really shocked by the reality of injuries when I visited our rehabilitation institute about 10 years ago.

Senator MOYNIHAN. Doctor Viano, we settled that question 30 years ago.

Dr. VIANO. I remember seeing a man trying to file a piece of wood. It turned out he was a dentist who had been a victim of a motor vehicle crash and suffered a head injury. From that time until today, I think my focus has been more on the prevention of disabling injuries as a method of really gauging our successes.

I brought a couple of graphs. I would like to relate to them. In terms of work lost years, injuries contribute more than any other cause of death in the United States. This takes into consideration the fact that the average victim is a young individual and so would have had many years of being productive if they were alive. The numbers now exceed 3 million years. Of those, motor vehicles contribute 60 percent. The way to think of that is that the average life expectancy is maybe 40 years for victims with serious injury and fatalities and we have about 40,000 a year, so we have 1.6 million years of productive life lost. It is our number one public health problem.





Estimate of Lives Saved with Safety Belt and Helmet Use

	1987 Fatalities Without Use		Lives Saved		
	In states with use laws	In states without use laws	All states with laws	70% use	100% use
Helmets	509(84.5%)	1,907 (20.4%)	436	473	676
Belts	15,587(19.8%)	9,169 (9.4%)	2,059	7,278	10,398
			2,495	7,751	11,074
		All occupants using belts or helmets			11,957

Dr. VIANO. The issue of how to prevent it has been studied. A number of members of the Association for the Advancement of Automotive Medicine and professionals in the National Head Injury Foundation have looked at the effectiveness of methods to prevent injuries. In my second graph and in my testimony, I have tried to summarize the best information on the effectiveness. The column second from the right is lap/shoulder belt effectiveness, and that says 42 percent. That means 42 unbelted victims would have survived fatal injuries out of 100 if they had just buckled their lap/shoulder belt. You will also see that the helmets when worn are 28 percent effective in preventing fatalities. These two are probably the most effective measures we have today in preventing serious injury and disability in motor vehicle crashes.

I would like to direct your attention to the far right column. As we are introducing air bags into more of our vehicles, our best estimate is that we will increase safety with the combination of lap/shoulder belt use and air bags giving us 46 percent effectiveness. I would also caution that it is not a trade-off. An air bag is not a trade-off for lap/shoulder belt use because if a person who normally buckles up fails to do so with an air bag car, they only get 18 percent effectiveness in preventing fatal injuries. That is, they increase their risk by 41 percent. I think that is one of the important reasons for this measure that you are deliberating, to encourage the use of lap/shoulder belts even as we introduce new and improved safety measures.

The next graph is our best estimate of the number of lives that would be saved. It is consistent with what you have heard in the previous testimony, that about 12,000 fatalities would be prevented. This comes from about——

Senator MOYNIHAN. Just one second. In one year?

Dr. VIANO. Per year. The right hand column shows the use of lap/shoulder belts. There are 25,000 individuals who died in 1987 that were unbelted in car crashes. With the 42 percent effectiveness, and assuming all of them had been belted, we would have saved 10,000 lives.

Senator MOYNIHAN. Let me see if I understand that. You say 25,000 were killed when they were belted.

Dr. VIANO. Unbelted.

Senator MOYNIHAN. Unbelted. And if we have a loss of say 47,000, does that mean the difference were belted?

Dr. VIANO. No, because you are mixing the fact that motor vehicle crash fatalities include motorcyclists, pedestrians, and others. Of the passenger car and truck fatalities—in the left-hand column, those are States with seat belt use laws, and the column next to it indicates States without laws. I will direct your attention to the fact that in States with laws, 19.8 percent of the fatalities had belts on. In contrast, only 9 percent of the fatalities in States without laws were belted. The numbers are those that were unbelted in car crashes and died. At a 42 percent effectiveness, and with everyone belted, we would have saved 10,000 lives. Even at lower use rate, we are saving thousands of lives by the voluntary use of belts.

This type of a measure is probably most important in developing a good health habit. I can remember Mr. Tooth Decay when I was growing up. That is one of the few things that I recall as a good health habit and I follow it regularly. I think the kind of measure you are deliberating on here today will help America have a consistent approach to the good health habit of safety belt and helmet use. We strongly support your measure.

Senator MOYNIHAN. Thank you, Doctor Viano. And thank you for the data and the slides.

Professor Hingson, from the Behavioral Sciences Department of Boston University School of Public Health, we welcome you.

STATEMENT OF RALPH HINGSON, PROFESSOR AND CHIEF, SOCIAL AND BEHAVIORAL SCIENCES DEPARTMENT, BOSTON UNIVERSITY SCHOOL OF PUBLIC HEALTH

Dr. HINGSON. Senator Moynihan, Senator Chafee, thank you very much for allowing me to testify this morning. I would like to offer my support for S. 1007, the National Highway Fatality and Injury Reduction Act of 1989. I hope that it will help to reinstate mandatory safety belt legislation in Massachusetts, which in turn would increase belt use and reduce injuries on our highways.

On January 1, 1986, Massachusetts became the sixteenth State to implement mandatory safety belt legislation, but just eleven months later Massachusetts became the first State to repeal such a law by a narrow 53-47 percent binding referendum vote.

My office monitored support and opposition for mandatory safety belt legislation before the law, after the law was enacted, and after repeal. We also evaluated the effects of the law and repeal on safety belt use, occupant injuries, and death.

First, let's look at public support and opposition. Prior to the passage of the law in 1985, my office conducted a statewide telephone survey of over 1,000 Massachusetts adults and we found that 58 percent at that time supported mandatory safety belt legislation. When the law was in effect, we conducted a similar statewide telephone survey in August of 1986. Again over 1,000 respondents were interviewed. Sixty-one percent said that if they were asked to vote that day, they would vote to keep the law. Unfortunately, as we know, the law was repealed and so we felt it was important to find out what happened. When the law was repealed, we attempted to recontact all of the respondents we had surveyed while the law was in effect. Within three weeks of the repeal, we had reinterviewed 80 percent of them, 9 percent refused, and 11 percent had moved. We found that of those who supported the law during the summer when it was in effect, 15 percent switched their vote and voted for repeal. In contrast, only 4 percent of those who had opposed the law switched and voted to sustain it.

Support for the law eroded because the law was increasingly seen as an invasion of personal liberty and increasingly viewed as ineffective in reducing injuries and deaths. Among summer supporters, 27 percent believed that the law was more of an invasion of personal liberty when we recontacted them in December than they did during the summer. They were seven times more likely to switch and vote for repeal. A total of 22 percent saw the law as less effective in reducing injuries and death in December than they did during the summer and they were five times more likely to switch and vote for repeal.

Unfortunately, the Massachusetts public did not have accurate data available to them about the impact of the Massachusetts law on injury and death. Just two weeks following our summer survey when the law was in effect, the Boston Globe ran a front page story saying that Massachusetts traffic fatalities had increased 10 percent after the law went into effect. Those data were not accurate. Other media also widely publicized the data.

Also post-law motor vehicle occupant injury data from Massachusetts were not available until well after the time that the referendum was voted on. National evaluations assessing the effects of mandatory belt laws in other States were also not published until after the repeal.

Let's take a look at the actual effects of the Massachusetts belt law. Massachusetts belt law was in effect from January through November of 1986. We conducted several statewide direct observation studies of belt use in over 10,000 vehicles at 160 randomly selected intersections. Belt use increased from 20 percent before the law to 37 percent immediately after the law, and to 34 percent 6 months later. After the law was repealed, belt use dropped back down to 24 percent and has remained close to that level since them. A comparison of occupant deaths in Massachusetts to other New England States without belt laws from 1982 through 1988 indicates that neither the law nor its repeal had any significant affect on the numbers of occupant deaths in Massachusetts. However, many more traffic injuries than deaths occurred. Data on injuries from the Massachusetts registry of motor vehicles indicate that while the law was in effect during the January through November period of 1986, when compared to the January through November period of 1985 before the law occupant injuries declined 22 percent—from 78,564 to 61,592. After repeal—and this is the data that you were asking about, Senator Moynihan—total injuries increased. When belt use went down after the repeal, the total injuries increased 11 percent, to 68,072.

Senator MOYNIHAN. What are your controls? These seem to me like raw numbers. Are these injuries per 100,000 miles? Is Massachusetts a large enough universe to have levels of confidence about shifts of this kind?

Dr. HINGSON. I would say that the fatality shifts were so small from year to year that you are correct.

Senator MOYNIHAN. It could be random.

Dr. HINGSON. There was a steady increasing mileage driven during this time period. Each year there was a slight increase in the numbers of miles driven. I think that it is very difficult with only one State to reach a strong conclusion about fatalities. On the other hand, I think that the injury data are clearly consistent with the law—having a beneficial effect; when the law went into effect, increased and occupant injuries went down, when the law was repealed, belt use decreased and occupant injuries went up.

Senator MOYNIHAN. Spoken like an epidemiologist. You said they are consistent with the possibility. Good. We respect that.

Dr. HINGSON. I think that unfortunately we will have data from some other States as well that repealed laws in the near future that we can take a look at. But the initial data would suggest this.

Nationally, as we have already heard, the effects of the laws with many more States, there is more reliability. The laws have typically been associated with increases in belt use from 20 to 40 to 60 percent; and 5 to 10 percent occupant fatality reductions; and 5 to 15 percent occupant injury reductions. The U.S. Department of Transportation has estimated that from 1983 through 1988, over 10,000 lives were saved because of mandatory safety belt legislation.

Our most recent telephone survey in Massachusetts indicates that the public there is still evenly divided about whether or not to have a mandatory safety belt law. A repeat direct observation study that we did of belt use reveals that it is still well below the level that it was during the time that the law was in effect and injuries remain 10 percent higher than they were during the time of the law.

I believe that the passage of S. 1007 could reopen the debate in Massachusetts about the benefits of mandatory safety belt laws. This time, however, I believe our lawmakers and citizens would have the benefit of information about the benefits of the law on reducing injury and death nationally, and on injury reduction in Massachusetts.

Thank you.

Senator MOYNIHAN. We thank you, Doctor. We will place in the record the paper you have done for the American Journal of Public Health. We recognize a scientific paper when we see that the authors are Hingson, Levenson, Heeren, Mangione, Rodgers, Schiavonne & Hertz. Seven authors is a guarantor of confidence levels. (See p. 174.)

Mr. Ford, we welcome you. We see you have a sign on your lapel. You are chairman of Freedom First and we welcome your testimony.

STATEMENT OF ROBERT FORD, CHAIRMAN, MASSACHUSETTS FREEDOM FIRST

Mr. FORD. Mr. Chairman, members of the committee, I would like to express my appreciation, and that of millions of Americans across the country who have worked long and hard since 1984 to defeat mandatory seat belt laws for this invitation to present our views before this committee.

Citizens by the millions have rejected government-mandated personal safety and, where possible, have repealed this infringement of individual liberty. Where referendums are not available, grassroots campaigns persist in an effort to change legislators' minds or career options.

Five years of controversy has witnessed three State referendum defeats of this so-called "popular" law, and a fourth is set for December in North Dakota. Five years of statistics have provided numbers which clearly demonstrate that mandatory seat belt laws are not the safety panacea proposed in exchange for just a little bit of our freedom. Compliance, the true vote of acceptability by the public, rarely reaches 50 percent. Highway fatalities and injuries are not reduced by the predicted promised amounts.

But our freedom to choose what we believe is in our own best interest concerning personal safety, our individual liberty to choose what we believe may be in our best interest between our life and death; yes, that little bit of freedom is now threatened before this committee with this bill.

Mr. Chairman, personally, I choose to use a seat belt, even in States which do not mandate use. I do so because I feel more safe personally in a majority of potential accident situations. If my decision, my choice is wrong—even if my seat belt directly contributes to or causes my death—only I can be held responsible for my decision and its consequences. But if someone is more seriously injured or killed as a result of being forced against his or her will to use a seat belt which directly contributes to this grave loss, who among us today will assume all that responsibility. If there is somebody here who is willing to assume responsibility for that one death caused by a forced action by government, would they please stand up and be recognized so that we can come to you later and name you in a law suit perhaps.

It happens, Mr. Chairman. And even proponents won't deny it. There are cases where a person is further injured or killed which is directly due to their seat belt. Should this bill pass, if there is any doubt it will happen, then I ask this committee to provide for a generous government or insurance restitution policy in that event as a show of good faith. Ask the insurance lobby if they are so assured of the righteousness of this legislation to agree to a double indemnity payment under these circumstances. Then watch the stampede for retreat.

Mr. Chairman, I witnessed that stampede in 1987 when I introduced before the Massachusetts legislature my Buckle-Up Bonus Bill. It was an incentive program to provide insurance premium discounts for any driver involved in an accident and found to be wearing a seat belt, with all passengers buckled up. The Massachusetts Seat Belt Coalition testified in support of my bill. The insurance lobby vehemently opposed and defeated it.

The industry's own 1988 insurance report on seat belt use by the Highway Loss Data Institute stated: "the present study found no unambiguous evidence that such laws have had an impact on personal injury protection claims. . . . " And the report concluded, "These results are disappointing." General Motors even halted its seat belt use death benefits program.

Mr. Chairman, all this aside, my appearance before this committee today is not to refute the potential efficacy of seat belt use. As I have stated, I chose to take my chances using mine. Today, I am here to raise a far more important issue than safety. I am here to defend freedom. Benjamin Franklin summed up this conflict most succinctly some 200 years ago when perhaps individual liberty held more meaning for Americans. Mr. Franklin asserted, and these words are on one of the Capital's memorials, the Washington Monument, "They that can give up essential liberty to obtain a little temporary safety, deserve neither liberty nor safety." That, Mr. Chairman, is the crux of our opposition. We do not want to be told how to behave in matters of personal safety. We do not want to be forced to wear seat belts or helmets because others think that it is good for us. We do not want to be forced to eat certain diets because some think that it too may be good for us, reduce deaths and medical costs, and make us more productive citizens. We do not want to be forced to give up certain pastimes simply because some may feel they entail an amount of unnecessary risk.

Mr. Chairman, in a truly free society, which we purport still to be, attitudes and opinions are not changed by coercion and force, they are changed through education, incentive, and example. One needs only look to the efforts to reduce the consumption of tobacco and alcohol to appreciate the success of these tactics. The stick approach has been tried for 5 years and has failed. Isn't it time to try the carrot approach while we maintain our freedom. The issue is and has been freedom and safety versus profits and dollar signs. Until we recognize this and act accordingly, freedom and safety will continue to be the losers.

Mr. Chairman and members of the committee, I ask you to please carefully consider this proposal in light of freedom and retain our God given right to self-protection in our personal health and lives as each of us best sees fit. Leave this issue where it is most effectively addressed—by the citizens of this Nation and of each State. Do not further distress the safety issue with a threat of withheld Federal Highway Funds, for this can only contribute to a serious deterioration in highway safety. If you wish to lead Americans to greater seat belt use, promote positive incentives. Increase educational efforts and provide good examples. But please leave America's personal liberty in tact.

Thank you.

Senator MOYNIHAN. We thank you, Mr. Ford, for a very eloquent statement. We see some very interesting appendages to your testimony and we will make certain that they are included in the record.

Senator Durenberger has joined us. We would welcome any comments you wish to make at this point, sir.

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator DURENBERGER. Mr. Chairman, I do have a statement that I would appreciate being made a part of the record.

Senator MOYNIHAN. Certainly, Senator.

[Senator Durenberger's statement follows:]

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Mr. Chairman, I am pleased to be here today to offer my comments on S. 1007, The National Highway Fatality and Injury Reduction Act.

The goals of S. 1007 are laudable and desirous, that being the reduction of the number of fatalities and crippling injuries which occur on our Nation's roadways. Last year, over 47,000 lives were lost in motor vehicle accidents and over four million people were injured. These deaths and injuries exact a huge toll, not only to the families who suffer the injury or death of a loved one, but also to the nation. These losses are generated by a combination of lost productivity, medical and rehabilitation expenses, and insurance and litigation costs.

There losses are substantial. I can understand why the proponents of S. 1007 expect that this legislation will significantly reduce those losses which befall unbelted motorists and unhelmeted motorcyclists. The intent of S. 1007 is to provide "a carrot and stick' mechanism of manipulating the disbursement of federal highway funds in order to coerce states into adopting mandatory seat belt and helmet laws. I believe there is merit in using federal funds to encourage states to improve traffic safety via greater education efforts and by stimulating innovative programs designed to reduce the number of high risk motorists. However, I have several reservation about using federal "blackmail" to force states into enacting mandatory seat belt and motorcycle helmet laws.

My reservations with the use of Federal sanctions on States that fail to legislate laws which require seat belt and motorcycle helmet use fall into three categories.

First, congressional attempts to mandate specific safety laws are inefficient allocations of resources to accomplish national standards. These proposals are inefficient because they would invert of the normal sequential process of improving highway safety.

The normal and proper sequence for improving highway safety begins with the collection and analysis of traffic accident statistics by the National Highway Traffic Safety Administration (NHTSA). The nation-wide data base is then used by NHTSA professionals to formulate recommendations and standards. The states then draw on those recommendations to tailor traffic safety laws and programs which best meets the unique needs of their State.

Second, the real goal of S. 1007 is to change behavior, not develop standards. In recent Congresses, legislation which mandates behavior by statute seems to be a popular mission even though this approach has a poor record of success. In this case, employing federal sanctions to mandate behavior is a "cop-out" to avoid the difficult task of insuring individual self-responsibility.

Thirdly, I believe that there are other and potentially more effective means that can be used to reduce the number of fatalities and injuries which occur on our Nation's roadways, other than soley relying on mandatory traffic safety laws. I believe that the State of Minnesota has set an example of how to do this.

I would like to provide the Subcommittee with the Minnesota experience on the comparative effectiveness of a mandatory helmet law versus enlisting motorcyclists in an effort to lower motor bike fatality rates. I submit a copy of a fact sheet compiled by the Minnesota Motorcycle Riders Association which cites alternate means to reducing serious motorcycle accidents. Also I have a joint press release issued by the Minnesota Motorcycle Riders Association and the Minnesota chapter of American Bikers for Awareness, Training and Education. This release announces an innovative approach to keep highly imperiled riders off the road and delivered safely home.

I would like to briefly comment on the contents of these two documents.

First of all, the record in Minnesota seems to contradict the evidence that mandatory helmet laws are the best way to increase traffic safety of motorcyclists. During the period (1968–1977) when Minnesota had a mandatory traffic safety law, fatalities per 10,000 registered vehicles went up every year. In contrast, during the twelve years which Minnesota has not required adult operators and passengers to wear helmets, the fatality rate has plummeted and is now at an all-time low.

Why did this occur? I believe that the reason this occurred is because Minnesota motorcyclists and lawmakers realized that there is no substitute for continued ongoing traffic safety education and tough licensing provisions. Minnesota motorcyclists encouraged the State legislature to enact tough licensing standards. They have also requested and assisted the State to implement comprehensive rider education programs and public awareness programs which have won national recognition and served as a model which other states have emulated.

In reference to the second document, I would like to comment on the innovative program which the Minnesota Motorcycle Riders Association and ABATE of Minnesota have implemented, called "Dial-A-Ride." The program utilizes volunteers to keep impaired riders off the road by offering a workable alternative by transporting an impaired rider and his bike to his home or to a motel, if needed. The program operates from May 1st to October 31st which is primary season to operate a motorcycle in Minnesota. The program has widely-distributed its posters and prominently displays the phone number to be called to use its service.

In closing, I would like to encourage my colleagues to closely examine why Minnesota has been able to drastically lower the fatality rate of its motorists to one of the lowest in the nation. I think they will find it is because Minnesotans know that there is no panacea or easy fix. Minnesotans know that it takes persistent effort in a broad array of traffic safety initiatives to significantly reduce roadway fatalities. Minnesota motorists and motorcyclists have shown that they have a strong commitment to improving traffic safety. They have requested, supported, and prodded the Minnesota Legislature to honestly and competently meet their demands for safer roadways.

Finally, I would caution that reliance on federal mandates to traffic safety, such as embodied by S. 1007, may be counter-productive in the long run. I have little doubt that it will stir up considerable resentment and provoke strong protest. It seems to me that a wider course of action would be to enlist cooperative support and to harness the creative energies of concerned citizens to work together with the goal of decreasing the number of serious traffic accidents. Consequently, I believe that this legislation needs to be refocused to solicit teamwork, rather than provoke conflict between government and citizens, both of whom share a common goal of improved traffic safety.

TEN FACTS:

The Minnesota Story

- **Minnesota had a full helmet law for 9 years. (1968-1977) Proponents of this law stated, "This law will dramatically reduce motorcycle fatalities."**
- **Fatalities DID NOT go down per 10,000 registered vehicles. THEY WENT UP EVERY YEAR!**
- **Minnesota has not had a helmet law (for adult operators and passengers) for 12 years. Our fatality rate is at an ALL TIME LOW per 10,000 registered vehicles. 1989 year-to-date fatalities are lower than ever.**

WHY?

- **Minnesota has the toughest licensing standards in the nation. Developed and supported by motorcyclists.**
- **Minnesota has the best Public Awareness programs in the nation. (17 states use the Minnesota model.) Developed and paid for by motorcyclists.**
- **Minnesota has one of the most comprehensive Rider Education programs in the nation. Developed and paid for by motorcyclists.**
- **Minnesota passed into law the first Comprehensive Self-Funding motorcycle safety program in the nation. Developed and paid for by motorcyclists.**
- **Minnesota has won 7 national awards for its motorcycle safety programs which are developed and paid for by motorcyclists.**
- **Minnesota has just developed "Dial A Ride", a program that offers impaired motorcyclists and their motorcycle a ride home. Developed, staffed, and paid for by motorcyclists.**
- **For the 9th time in ten years, Minnesota's Legislators refused to pass a law requiring adults to wear helmets. They simply stated, "Motorcyclists are doing the job that all the "experts" were not able to accomplish, which is to lower Minnesota's accident and fatality rate to an all time low!"**

• • • • • • • • • • • • • • •

S.F. 1007 is an infringement on the rights of Minnesota citizens. It is also an infringement on the authority of Minnesota's Legislature to decide matters that directly impact the lives of their constituents. It is certainly an insult to the motorcyclists of Minnesota who have done the job better than the so-called "experts", and paid for it out of their own pocket!

PLEASE VOTE NO ON S.F. 1007

Prepared and distributed by the Minnesota Motorcycle Riders Association, P.O. Box 27528, Minneapolis, MN 55427 (612)541-1704

"DIAL A RIDE"

DIAL A RIDE IS A JOINT VENTURE OF M.M.R.A.(MINNESOTA MOTORCYCLE RIDERS ASSC.) ANT A.B.A.T.E. of MINNESOTA (AMERICAN BIKERS for AWARENESS, TRAINING and EDUCATION). THIS COOPERATIVE EFFORT BY ALL CONCERNED MOTORCYCLIST IN MINNESOTA IS ONE STEP CLOSER TO ATTAINING OUR GOAL OF A SAFE, AND FREE ENVIRONMENT IN WHICH TO RIDE.

THE BASIC PROGRAM IS DESIGNED TO KEEP IMPAIRED RIDERS OFF THE ROAD, BY OFFERING A WORKABLE ALTERNATIVE. THE MOST DIFFICULT THING YOU CAN UNDERTAKE IS TO CONVINCE A PERSON WHO HAS HAD TOO MUCH TO DRINK ,TO LET SOMEONE ELSE RIDE THEIR BIKE. JUST AS HARD IS TO TALK THEM INTO LEAVING THEIR BIKE, AND RIDE HOME WITH YOU. WITH THESE PROBLEMS IN MIND, WE HAVE DEVELOPED "DIAL A RIDE".

IT WILL WORK THIS WAY: IF YOU ARE WITH SOMEONE WHO HAS HAD TOO MUCH,AND YOU DO NOT WANT THEM TO DIE, YOU SIMPLY CALL 612-541-1704 (ANY TIME FRI.,SAT.,SUN.,OR HOILDAYS FROM APRIL 1st. THROUGH OCT 31st.) AND TELL THE PERSON ANSWERING THE PHONE WHO YOU ARE, WHERE YOU ARE,WHO NEEDS THE RIDE, AND WHERE YOU WOULD LIKE THEM TAKEN. THE TELEPHONE STAFF WILL THEN ASK YOU FOR A PHONE NUMBER WHERE YOU CAN BE REACHED. THEY WILL THEN CALL ONE OF THE A.B.A.T.E., OR CLUB VOLUNTEERS IN THE AREA, AND DISPATCH THEM TO YOU WITH A CAR-TRAILER, VAN OR PICKUP TO TRANSPORT YOUR FRIEND, AND HIS OR HER BIKE HOME. THE DISPATCHER WILL THEN CALL YOU BACK AND TELL YOU WHO IS COMING, AND WHAT TIME THEY SHOULD ARRIVE. YOU MUST STAY WITH THE IMPAIRED PERSON UNTIL HELP ARRIVES, AND THEN ASSIST IN LOADING YOUR FRIENDS BIKE. YOU SHOULD THEN ACCOMPANY THE VOLUNTEER, TO HELP UNLOAD. THIS VOLUNTEER IS HELPING YOU KEEP YOUR FRIEND ALIVE, SO BE PREPARED TO HELP THEM.

THERE MUST BE LIMITATIONS IN ALL PROGRAMS, THE VOLUNTEERS ARE NOT REQUIRED TO PUT THEMSELVES, OR THEIR EQUIPMENT INTO ANY CIRCUMSTANCES THAT THEY DEEM TO BE UNSAFE, AND OR UNCOMFORTABLE. IF THE IMPAIRED PERSON BECOMES RUDE OR DISORDERLY YOU AS THE CONCERNED FRIEND SHOULD INTERVENE, IF NOT THE VOLUNTEERS ARE INSTRUCTED TO CALL THE "DIAL A RIDE" DISPATCHER AND INFORM THEM THAT THEY CANNOT TRANSPORT THIS PERSON, AND ADVISE YOU AS THE FRIEND TO EITHER ADJUST THEIR ATTITUDE, OR CALL THE POLICE. THIS PROGRAM IS TO ASSIST PEOPLE WHO ARE TOO IMPAIRED TO RIDE, BUT WE WILL NOT "BABYSIT" A DRUNK.

A.B.A.T.E. of MINNESOTA, AND THE M.M.R.A., RESERVE THE RIGHT TO TRANSPORT THE IMPAIRED PERSON TO A MOTEL, (AND PAY FOR THE ROOM) IF THE DESIRED DESTINATION IS DETERMINED TO BE EXCESSIVE.

THIS PROGRAM REQUIRES DEDICATED PEOPLE WHO TRULY CARE ABOUT HELPING OTHERS, AND ARE WILLING TO GIVE OF THEMSELVES, AND THEIR PRECIOUS TIME TO MAKE MOTORCYCLING SAFER FOR ALL.

WE WILL BE CONTACTING CLUBS IN THE AREAS WHERE WE DO NOT HAVE AN A.B.A.T.E. CHAPTER TO HELP US WITH THIS PROJECT.

IF YOU DESIRE FURTHER INFORMATION, FEEL FREE TO CONTACT ME.

GUS"PAPPY"HAAG
A.B.A.T.E. of MINN. M.M.R.A. ADVISORY BOARD
4610 COLFAX AVE.NO.
MPLS.MN.55412

Senator **Moynihan.** Senator Chafee.

Senator **Chafee.** Mr. Chairman, there is another statement here for the record, by Senator Symms. He would ask that his statement be placed in the record.

Senator **Moynihan.** So ordered.

[Senator Symms' statement follows:]

OPENING STATEMENT OF HON. STEVE SYMMS, U.S. SENATOR FROM THE STATE OF IDAHO

Mr. Chairman, I am pleased to be able to comment today on the "National Highway Fatality and Injury Reduction Act", sponsored by my leader on this side of the aisle, Senator Chafee, and our distinguished subcommittee chairman, Seantor Moynihan. The legislation would require states to enact and enforce seat belt laws for front seat occupants of passenger cars and a universal helmet law for motorcyclists. States that fail to enact conforming statutes would be subject to the loss of 5 to 10 percent of their federal-aid highway funds; however, the bill establishes an incentive grant program for states that qualify by enacting the requisite statutes and meeting belt and helmet use standards.

I appreciate the justifiable concern about highway safety and health care costs which I understand to be the motivating force behind this bill. Last year, more than 47,000 people died in accidents on our Nation's highways and many thousands more were seriously injured. Notwithstanding the fact that in the same year we recorded the nation's lowest highway fatality rate in history—also the lowest highway fatality rate in the world—those 47,000 lives lost are too many and every reasonable effort should be made to bring that number down.

I'm *for* highway safety, and I want to do everything possible to promote highway safety programs in the states. But I want to do it without impinging on the traditional prerogatives of state and local governments and without using the Highway Trust Fund to force the hand of state legislators through what I would call a form of legalized blackmail. I hope Members of this committee, being the principal guardians of programs dependent on the Highway Trust Fund, will be the first to say, "NO", to the continued use of sanctions to foist national policy initiatives on state legislatures.

No matter how worthy the goal—and the reduction of highway fatalities and injuries is a worthy goal indeed—we cannot extend the reach of the Federal Government if we truly wish to reduce the federal budget and buget deficit. Let us leave some discretions, some power in the hands of state legislators. Let us provide technical assistance and establish programs to educate state officials about the importance of, and the means to administer, certain safety programs, but let us do this with a vigilant eye to the federal system of government which still gives spirit and life to our Constitution.

I will review carefully the record established by testimony presented at this hearing, and I will keep an open mind to the argument that the federal government should take a more active role in promoting seat belt and helmet use. However, I cannot and will not support the use of highway sanctions to meet these goals, and I will remain deeply skeptical of legislation that constrains the ability of state officials to establish their own highway safety and enforcement priorities.

I ask unanimous consent that copies of letters I received from Kermit Kiebert, Director of the Idaho Transportation Department, and Kathryn Kruger, Executive Director of the Idaho Safety Restraint Coalition, be printed in the hearing record following my remarks.

TRANSPORTATION DEPARTMENT
P.O. BOX 7129 • BOISE, ID • 83707-1129 • 208/334-8000

September 18, 1989

The Honorable Steven D. Symms
U.S. Senate
509 Senate Hart Building
Washington, DC 20510

Attn: Taylor Bowlden

Subject: Senate Bill 1007, "National Highway Fatality and Injury Reduction Act of 1989"

Dear Senator Symms:

We have reviewed S.1007 which would require states to enact laws mandating the use of front-seat safety belts and motorcycle helmets, or suffer the withholding of Federal-aid highway funds.

If that legislation is enacted, and Idaho did not comply, we would be penalized as follows based on fiscal-year 1989 apportionments. A five-percent withholding in fiscal year 1992 would reduce Idaho's apportionments by $3,590,361 and a ten-percent withholding in succeeding fiscal years would total a $7,180,722 annual reduction.

At risk would be this Department's primary, secondary and urban construction programs as well as both the Interstate construction and Interstate 4R programs.

In past years, the State Legislature enacted a helmet law and later repealed it. Idaho does have mandatory seat belt and child restraint use laws in place.

We urge you to strongly oppose S. 1007 because of its potentially severe effects on Idaho's highway program.

Sincerely,

KERMIT V. KIEBERT
Director

KVK:JMC:ssk/tslfatalact
cc: Representative Stallings
    Representative Craig

Celebrate IDAHO
1890 · CENTENNIAL · 1990

Buckle Up, Idaho!
Make It Your Law For Life.

IDAHO
SAFETY
RESTRAINT
COALITION
P.O. BOX 2044
BOISE, IDAHO 83701
(208) 345-8888

ADMINISTRATOR
Bae Tews

COMMUNITY RELATIONS DIRECTOR
Ralph McAdams

BOARD OF DIRECTORS

DIRECTOR
Harold West

ASSISTANT DIRECTOR
Robert Henderlider
Idaho Automotive Dealers Assoc.

SECRETARY
Jay Webb
Attorney at Law

Dick Navarro

Greg Casey

Dick Eardley

Mark Gibson

Vaughn Killeen

Tina Kircher

Mel Morgan

Cathy Norris

R. Ben Reitze

Robert Sobba

Lawrence Vickman, M.D.

ADVISORS
Pat Kole

Floyd Mover

October 12, 1989

The Honorable Steve Symms
Committee on Environment
and Public Works
US Senate Room SH-508
Washington, DC 20510-6175

Dear Senator Symms:

I am writing to alert you of the importance of Senate Bill 1007, known as the "National Highway Fatality and Injury Reduction Act."

As executive director of the Idaho Safety Restraint Coalition, we strongly recommend your support of Senate Bill 1007. Our coalition is part of a national network of coalitions funded by Traffic Safety Now, Inc. (TSN), one of the nation's leading traffic-safety organizations. TSN is supported by the domestic automobile manufacturers and includes the active participation of several key industry associations.

On October 17, the Senate Subcommittee on Water Resources, Transportation and Infrastructure will hold a hearing on this legislation. TSN President Charles L. Spilman will be testifying at the hearing and will present the views of the domestic automobile manufacturers and more than 500,000 coalition volunteers from across the country who support safety-belt-use laws. Attached for your review is a synopsis of Mr. Spilman's remarks.

The passage of Senate Bill 1007 will save the lives of motorists in Idaho and across the country. We urge you to support this legislation.

Sincerely,

Kathryn Kruger

Kathryn Kruger
Executive Director

Enclosure

L044

TRAFFIC SAFETY NOW, INC.

SENATE BILL 1007

BRIEFING PAPER

- Traffic Safety Now, Inc. supports Senate Bill 1007 -- "The National Highway and Fatality Reduction Act of 1989" -- because we believe its lifesaving potential will make it the most important highway-safety bill in U.S. history.

- To date, safety-belt-use laws in 34 states and the District of Columbia have increased belt-use rates by 400 percent, saved more than 10,000 lives and reduced thousands of serious and moderate injuries.

- Public opinion polls prove that safety-belt use is popular among Americans. Belt-use legislation also is supported by more than 70 percent of the public.

- The state grant program outlined in this legislation will encourage the 34 states with a safety-belt-use law to further intensify their efforts to increase belt use.

- Experience has shown safety-belt-use laws alone can not keep belt-use rates at desirably high levels. For this reason, we support the community-based education programs called for in this legislation.

- In 1986, Idaho passed a safety-belt-use law. Senate Bill 1007 will entitle the state to a significant portion of the grant monies available for safety-belt education.

- Idaho's current safety-belt-use rate of 34 percent is well below the national average for states with a safety-belt-use law. It could be increased substantially with the passage of this legislation, thus saving lives and reducing injuries on Idaho roads and highways.

* * *

Senator **Chafee**. Mr. O'Neill, there has been a good deal made here in the testimony and some of the statements from members of the panel urging that the answer to this problem be education. You had some comments on that and I think we all remember—not just remember, but they are still existent—the efforts of the automobile industry, "Buckle Up for Safety." Indeed, I believe in Ford automobiles it is written on the side of the window, "Buckle Up." So these efforts I don't think can be discounted. In other words, it isn't a question of whether we should embark on an education program that hasn't been tried, because certainly I've seen it in my own State, as well as I mentioned on these American automobiles. Could you comment on that. You are pretty close to seeing the educational efforts.

Mr. **O'Neill**. Senator, there have been repeated attempts and continuing attempts to educate the public about the benefits of seat belt wearing and motorcycle helmet use. These efforts go back decades. Millions, and millions, and millions of dollars have been spent in this country, and huge amounts of money have been spent in other industrialized countries. The best that we can say about these efforts is that they have succeeded in educating the public basically about the benefits of belts and helmets. I think the public appreciates that these safety features produce benefits when used, but they choose not to use them. The reason I believe they choose not to use them—and it is true around the world — is this universal view that when you get behind the wheel of a car or behind the handlebars of a motorcycle, you are not going to be involved in a crash that day on that particular trip. So there is a view that these are good features for everyone else, but I don't need them because I am the above average driver or rider.

Educational efforts should continue. I think they are an essential part of any successful law, whether it is a belt use law or a helmet law. I think we have to combine a certain amount of enforcement with education and publicity. That combination in many countries has produced seat belt use levels of over 90 percent. In Canada—our closest industrialized neighbor, in many respects—belt usage in the Provinces of Canada is now over 80 percent. That has occurred basically because of primary enforcement laws that have been publicized and enforced. I don't mean heavy-handed enforcement. It is not necessary.

Senator **Chafee**. Thank you. My time is short here. I would just like to ask Mr. Ford a question. You were speaking in behalf of Freedom First as to these rights that an individual has—and, indeed, the motorcyclists will say they have a right to ride their motorcycle and feel the wind blow through their hair—and questioning why are we enforcing this. Now what do you say to the counter argument—as in law school we always learn—that the right to swing your fist ends at the point of my nose. You have the right to ride motorcycles or to drive your automobiles and to go through the windshield, if that's your choice. But the trouble is that the rest of us pick up the bill for that. Now, where do your rights end and where do our rights begin? We have many demands on medical funds in this Nation. We don't want to spend them where they can be saved, where they can be avoided. Could you briefly comment on that? The statistics are clear and if you will accept them, just take the motorcycle statistics that Dr. Baker and others gave that something like 64 percent of those injured on motorcycles are eventually paid for by the Government.

Mr. **Ford**. Certainly, Senator. I am actually more familiar with the seat belt issue, but I think we are running on parallel courses here. I think first came our freedom. We decided to form a government, which we did, and this government has grown. This government has decided to assume these social programs of public health, etc. If it becomes a burden then perhaps society should look at the programs before it impedes on freedom, or perhaps it ought to focus more on, as I brought up before, incentives. Education is all well and good, it has been done, it hasn't been——

Senator **Chafee**. We cannot fall back on that Shibboleth of education. Education has been tried. I think we all recognize that. Mr. O'Neill, others, we are all familiar with the billboards that say buckle up for your own safety, and on, and on. I don't want to be severe; we can't hide behind the solution is education.

Mr. **Ford**. I am not merely suggesting education, Senator. I am suggesting incentives. We've heard for countless years now, especially from the insurance industry, of the money that is to be saved. This is why the Senate has proposed this bill. If this money is truly to be saved, I think that if the individual who is using the seat belt is going to benefit the insurance industry by reducing insurance premiums, if an incentive is implemented for people who do use seat belts, such as my Buckle-Up Bonus bill proposed—when you put money in front of people and they can profit by a certain course of action, or lose by an opposite course of action, couple that with education and I think you can get the compliance rate we're getting now with mandatory seat belt laws. The incentive has always been lacking. If the insurance industry is so certain that this money will be saved, why won't they participate in a program to provide incentive?

Senator **Moynihan**. Well, those are perfectly good questions. I would like to make one point, which I am sure the panel will agree with, there is no State that I am aware of which does not require a person to have a government-issued license in order to drive. The vehicles are licensed and the drivers are licensed, and that has been the case for about 60 years. So I think we have established a presumption that there is a public interest in the behavior of the vehicles and of the people who drive them. But that's no more than that and we welcome dispute. I would like particularly to thank Mr. Ford for presenting in his testimony the paper given to the Transportation Research Forum in San Antonio in 1987 by Mr. John Semens, of the Arizona Department of Transportation, and Dianne Kresich, a transportation analyst for the City of Mesa. It is obviously a good iconoclastic proposition. Science of any kind advances by questioning what everybody knows, right. Dr. Hingson, you agree with that?

Dr. **Hingson**. Absolutely.

Senator **Moynihan**. Well, there you are. Thank you gentlemen very much.

Senator **Durenberger**. Mr. Chairman, I am prompted to ask only one general question. I apologize that a Labor and Human Resources Committee commitment that I had at 8:30 a.m. made it impossible for me to be here for the first panel. Maybe the doctors on this panel could respond briefly to my question. I listened to my colleague, John Chafee, say two things. First, he says that the rest of us pick up the bill. I think I understand that, but I don't believe it has to be that way, so my question is: Why do we keep accepting this judgement that the rest of us have to pick up the bill?

And then I heard him say we cannot fall back on the shibboleth of education. It strikes me that is the thing we should be falling back on. Whether it is education, information, or whatever, but the common element here is personal responsibility. I've grown up in an America in which I was always insulated from my own responsibility. The young pay for the illnesses of the old, the healthy pay for the illnesses of the sick, and all of us pay for the irresponsibility of certain parts of our society. That's just sort of the way it has been in all the time I've been growing up. It isn't just in automobiles and cycles, it is smoke yourself to death and somebody else will buy you a lung or buy you a new heart, or whatever.

It is difficult for me to say that we should adapt because that's the way it has been. Why should I adapt to the notion that the rest of us "will continue to pick up the bill?" Is it not possible in this country for us to develop a system of education, information, actuarial-determined insurance plans, or whatever the case may be; but some kind of a system in which those who choose to follow a course of action which we know and they know will lead to adverse medical results, is it impossible to ask them to pick up some part of the cost and to know ahead of time that they will have to pick up that cost.

Mr. O'NEILL. Senator, I would like to respond partially to that question. I think one of the factors that is at work here, and it is also very much involved in the question of insurance incentives, are our tort laws. If you look at your insurance premium the next time you get your bill, most of the dollars on that bill for injuries or for injury coverage will be to protect you against claims made by third parties. All the promising that I could do to wear a seat belt will not influence the behavior of the third party that I may injure. The big dollars are paid out in these liability claims. So we have a situation where the system is working against the sorts of first party responsibility—if I can use that term—that you are talking about.

Senator DURENBERGER. What reform would be——

Mr. O'NEILL. It is also worth noting that in many of the States with seat belt laws, it was written into the State law that civil awards could not be reduced for failure to wear a seat belt. It is part of the law in many States that you simply cannot reduce the civil award for someone, even though they may have contributed to the severity of their own injuries by failing to buckle up. So the tort system in the United States is a contributing factor to all of this. That is one of the reasons why insurance incentives at first blush may seem attractive, but when you look at first party medical coverage, coverage for yourself in most States is a very small dollar amount per year. In the State of Virginia where I live, it is a tiny amount per year. The biggest amount of dollars I am paying in my automobile insurance are to protect me against medical claims from third parties. So my promise to wear my belt would only have a minimal impact on my insurance premium.

Senator MOYNIHAN. Doctor Viano.

Dr. VIANO. The most recent studies show about one-quarter of the emergency room costs go unsponsored in hospitals. That's the monetary side. If I might, though, may I talk about the personal side of living with a serious injury. I think that is the devastation that motivates me to work on this problem. Today, with good emergency care and with good care of infection in survivors, the average life expectancy of a very severely disabled person is 35 years. The devastation is that individual, the family, and the disruption. That is really the bill that we are trying to avoid by reasonably good health habits of seat belt and helmet use.

Senator MOYNIHAN. Could I just say to my friend Senator Durenberger, we can sometimes get rather abstract here, but we are dealing with issues that sometimes require such thinking. We made a decision in this country about 60 years ago—I don't think we had a vote on it, but we made a decision—and that was that everybody would drive a car, and at all ages after about 15. We sorted everything out around that first fact. We did not make a decision that everybody would fly an airplane. To the contrary, only very special people can fly airplanes.

Senator DURENBERGER. That seems to be coming though.

Senator MOYNIHAN. Then we'll have hearings on that subject one of these days, too. But you could change this completely just by restricting the number of people who can handle this very risky thing. As I was saying earlier, the first development of crash worthiness and crash medicine, trauma, came in the Air Force for airplanes, which seemed to be a very dangerous environment—they are not really, a Model T Ford was a much more dangerous environment—but that's where helmets come from and where seat belts come from. We restrict with great severity the number of people who can fly airplanes, but yet we want everybody to drive an automobile. If so, you are going to have a lot of trouble.

Thank you very much. We appreciate your testimony. We have enjoyed it and now we have to move on to our next panel. We are going to make a slight change in our procedure because we have a debate on the Senate Floor about a Constitutional Amendment which requires our attention. So we are going to hear all of our next two panels together. We have next Mr. Robert Rasor, Vice President for Governmental Relations of the American Motorcyclist Association; Mr. Michael Williams Farabaugh, who is Chairman of the Motorcycle Riders Foundation; and Mr. James Ouellet, who is a scientist working with the Motorcycle Accident Research Project at the University of Southern California. I think we will stop with that group because the next group is really different.

Mr. Rasor, good morning and please go right ahead.

STATEMENT OF ROBERT RASOR, VICE PRESIDENT, GOVERNMENT RELATIONS, AMERICAN MOTORCYCLIST ASSOCIATION

Mr. RASOR. Thank you, Mr. Chairman. If you will indulge me two housekeeping chores before I begin my time.

Senator MOYNIHAN. Sure.

Mr. **Rasor**. In reviewing my written testimony for the record, I notice there is an error on page 4 in the first paragraph. I would like to change from renewal to repeal.

Senator **Moynihan**. So "prior to renewal" will read "to repeal." Done.

Mr. **Rasor**. Thank you very much for the opportunity to appear before the committee today. The American Motorcyclist Association is a national organization founded 65 years ago and headquartered in Columbus, Ohio. We have 168,000 members and I think it is interesting to point out that we have riders and motorcyclists from 15 States represented in the hearing room today.

The AMA has always been vitally interested in motorcycle safety. You may think it is odd that we are here testifying against helmet laws, but we believe there are bigger issues at stake here—individual freedoms and States' rights.

The National Highway Fatality and Injury Reduction Act presents several key questions, we believe:

First, where should these laws be decided? State legislatures or in Congress?

Second, do Federal sanctions serve as appropriate inducements for motorcycle safety programs?

Third, are the social costs associated with motorcycle injury dramatically different from the population at large?

Fourth, are non-governmental initiatives providing the effective responses to motorcycle safety issues without Federal interference?

Fifth, finally, is this legislation really needed?

We believe the answers to these questions must lead you to conclude that S. 1007 should not be passed.

On the question of whether State legislatures or Congress is the appropriate venue, we believe that State Government is in the best position to evaluate highway safety programs in the context of local and regional demands. In 1989, 64 separate pieces of legislation have been introduced to repeal, reinstate, or modify existing motorcycle helmet laws. There is no need for the Federal sanction club in this instance.

On the issue of sanctions as an inducement for motorcycle safety programs, history tells us that they don't work. Motorcycle safety programs require imagination and initiative. Sanctions generate complacency and a willingness to accept compliance as a completed program.

Sanctions are increasingly repugnant as an enforcement tool. President Bush recognized this sensitivity when he backed away from a plan to withhold Federal Highway Funds from States that refused to revoke drivers' licenses of drug offenders because the plan was unpopular with State Governors. They felt that the measure was an encroachment on States' rights. We agree.

The purported disproportionate social costs associated with motorcycle injuries have been frequently cited as justification for requiring mandatory helmet laws. We believe that the social burden theory is a myth and that motorcycle accident victims require no more of the taxpayers than the general public.

At this point, I think it would be interesting to note that Doctor Valenziano alluded to a study that said "64 percent of motorcycle trauma patients were dependent on public funds." The same study was alluded to by Doctor Baker, and I think Senator Chafee. I would like to point out that that study is one that was done in Seattle at the Harbor View Medical Center by a Doctor Rivara. It is interesting to note that two months after the publication of that study in the Journal of American Medical Association, the Administrator of the Harbor View Medical Center, Dr. David Gitch, appeared before the House Ways and Means Subcommittee on Appropriations and testified that 44 percent of the total patient population at Harbor View was dependent on Medicaid; 23 percent paid through Medicare; and 26 percent paid through third party insurance; while 7 percent did not pay at all. In a quick comparison we find that in the Rivara study, 63.4 percent of the motorcyclist relied on public funds, while 67 percent of the general patient population at the same hospital were dependent on public funds.

A comparison of studies by Rivara and by Ellen J. MacKenzie, a Ph.D. working at the Johns Hopkins organization, of the economic impact of trauma patients reveals that motorcycle accident victims in the Rivara study averaged $25,794 per patient. In the larger patient population study in the MacKenzie study, the average costs for trauma care were $32,039. Motorcycle accident victims averaged $6,245 less per victim.

It is apparent from these and other studies that contrary to some authors' conclusions, motorcyclists are not more burdensome to taxpayers of this country than any other group.

One of the benefits of the removal of Federal sanction authority in 1975 has been the emergence of motorcycle safety programs that are not dependent on the Federal Government. Since 1975, 33 States have enacted self-funded rider education programs that are paid for by licensed motorcyclists, in effect taxing themselves to provide education opportunities.

Senator MOYNIHAN. Sir, we are going to have to ask that the timing light be observed because we are under pressure.

Mr. RASOR. That's fine. I will conclude very quickly, Mr. Chairman. The point that I would like to make is that we believe education programs do work and contrary to what previous witnesses may have said, we believe the experience in Colorado, which is cited in this newspaper article, which cites education as one of the contributors to the 30 percent reduction of their accident picture in that State.

Senator MOYNIHAN. Would you like to put that in the record?

Mr. RASOR. I would be happy to.

[The article referred to follows:]

State motorcycle fatalities down 31%

Officials credit increased awareness of dangers of drinking and driving

By Marilyn Robinson
Denver Post Staff Writer

Colorado's motorcycle traffic deaths are down 31 percent this year.

As of last week, 31 motorcyclists had been killed on Colorado roads compared with 45 at this time last year.

If the trend continues, the state could wind up with the fewest number of motorcycle fatalities since 1976, the last year a mandatory helmet law was in effect.

Highway safety officials think greater awareness of the dangers of drinking and driving mainly is responsible for the decline.

Overall, alcohol-related traffic fatalities have dropped 36 percent in the last five years in Colorado.

For motorcyclists, they're down 52 percent.

"The biggest contributor to the decrease in fatalities appears to be in the area of alcohol," said Dan Hopkins of the state Division of Highway Safety.

"You could be the best-trained motorcyclist in the world, and if you go out and drink and ride, you're likely to have an accident," said Marc Beaulieu, president of the Colorado Association of Motorcyclists.

Other possible factors for the decline, various motorcyclists speculate, include rider education courses and safety seminars, and technical advancements that have improved motorcycle handling.

Although deaths are down, safety officials and motorcyclists see plenty of room for improvement.

Trooper Mark Anello of the Colorado State Patrol studied 27 recent fatal motorcycle accidents and found 17 were the rider's fault.

"I can't help but think that a lot of accidents where the driver ends up at fault could have been prevented ...," said Anello, himself a motorcycle rider.

Many see more education as the key.

"We're happy the statistics are down, but we're going to take them down some more," said Alinga Allen of Freedom Harley-Davidson, a Lakewood motorcycle dealership.

The dealership and the Denver chapter of the Harley Owners Group have set up the Jan Marie Leslie Rider Education Foundation to promote rider education. The foundation honors a motorcyclist killed in a July 4 accident.

Safety officials think greater use of protective equipment, including helmets, also would help.

They say cyclists without helmets are

Please see CYCLES on 9A

Motorcycle fatalities down 31%

CYCLES from Page 1A

three times more likely to suffer a fatal injury and twice as likely to suffer nonfatal head injuries than helmeted riders.

But critics of mandatory helmet laws think the decision should remain with each rider.

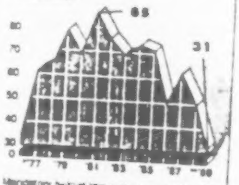
"Our stance is freedom of choice," said Pat Smith, state coordinator of the ABATE (A Brotherhood Aligned Towards Education) motorcycle group.

But Smith said he personally thinks helmets are a contributing factor to many accidents.

"They take your concentration away from riding. They're heavy. They're hot.

MOTORCYCLE DEATHS IN COLORADO

There was an immediate increase in fatalities after state legislators repealed a mandatory helmet law. But since then the number of casualties has fluctuated.



* Mandatory helmet law was repealed May 1977

** As of Oct. 7

SOURCE: Colorado Div. of Highway Safety

The Denver Post / Leslie Jorgensen

"They impair your hearing, your peripheral vision. They contribute to neck fatigue, and I think, because of limiting your perception, they contribute to accidents."

Denver Post
10-9-89

Mr. **Rasor**. A similar example I think can be drawn from Senator Durenberger's State of Minnesota, which has an outstanding record in motorcycle accident reduction and motorcycle education. I think it is largely the result of the educational program that has been implemented in that State.

In short, we believe this is not a necessary piece of legislation. It is being actively debated in the State legislatures. The State legislature is the proper province for this because of their proximity to those who elect them and the sensitivity to their individual transportation and highway safety needs.

Senator **Moynihan**. We thank you, sir. We will get to questions later on.

Mr. Farabaugh, welcome, sir.

STATEMENT OF MICHAEL WILLIAMS FARABAUGH, CHAIRMAN, MOTORCYCLE RIDERS FOUNDATION, INC.

Mr. **Farabaugh**. Thank you very much Mr. Chairman and members of the committee. My name is Mike Farabaugh and I am from South Bend, Indiana. By the way, that's Notre Dame country, the number one team in the country.

Regarding my background in education, I think it is interesting to observe that all of the people testifying this morning have extensive education in their fields and that's why they were asked to come here and provide us with this valuable information.

Senator **Moynihan**. I just have to clear this up. Are you an emissary of Father Hesburgh?

Mr. **Farabaugh**. Well, I spent 18 years on a football field. I didn't play for Notre Dame, but I sure go cheer them on every Saturday since I live about four miles from the campus.

I have an extensive background in grassroots rider education. I have been teaching rider education for 12 years. I am the fifth ranking chief instructor in the country for the Motorcycle Safety Foundation. I have taught rider education in 30 States, I have 16,000 graduates under my belt in rider education.

Senator **Moynihan**. Do you devour them?

Mr. **Farabaugh**. Interestingly enough, there are about 60 percent of the people who take this rider education who are women and some of them have attracted me at one time or another.

Senator **Durenberger**. No comment, Mr. Chairman.

Mr. **Farabaugh**. I do have a strong feeling toward education as being the answer—and a viable answer and solution—to some of the problems that have been presented to us this morning.

I represent motorcycling and motorcyclists from my heart, as do many of these folks attending this hearing today from all over the country. Each one of us makes a conscious dedicated effort to promote our sport in a form that provides solutions to our problems. It seems we all have a common goal here today. The reason behind S. 1007 is a very admirable goal, and that is to save lives. Everybody who has spoken this morning wants to save lives and save dollars. That can be done through education and we are proving that across America. Motorcyclists have come out, given their own dollars through user fees, they have worked with their own State legislative bodies, they have raised $10 million in 1988 alone—they, being 7 million motorcyclists. This money has gone to education. In 33 States, we have contacted Governors, our State legislators, our grassroots motorcyclists and asked them to give. We would take those dollars and create a curriculum and a viable rider education program that will produce a safer atmosphere on America's highways.

Motorcycling has been around for 104 years. We decided 15 years ago to get smart and get involved in rider education. After using the proper marketing techniques and establishing a fund to create some dollars, the last eight years have been very formidable on the rider education level. In the last eight years, fatalities in accidents in America have dropped by 30 percent in the motorcycle population. When you take into consideration that 47 States in America already have some form of helmet law, where is the need for this bill? There are currently 33 States which have rider education.

Rider education is the responsible, hands-on approach that is securing results in reducing accidents and fatalities dramatically in every State where it has been made available through the user fee. Under the Indiana Motorcycle Safety Program—of which I have been in charge for the past 11 years—working in conjunction with the Department of Education, the Governor's office, and our State legislature, we have created a licensing program, we have an extensive campaign on driver awareness, and we are working with the legislators and government in that State to reduce fatalities and accidents by an incredible 31 percent. Indiana has a helmet law for minors, but allows responsible adults to make their own decisions.

Again, I question the need for Federal legislation when there are already 47 States that have some form of helmet law.

With a professional curriculum being developed and implemented through the proper channels, utilizing talented instructors who create a comfortable learning atmosphere for students, rider education is not only a viable alternative to a national helmet law, we have proved it is working. Again, the past eight years have been the most formidable for rider education. Motorcycle fatalities have dropped nationwide by 30 percent. We are performing. We are reducing accidents and fatalities. Why do we need another law?

In closing, Mr. Mark Twain once said, "Education is everything." I would like to extend Mark Twain's advice to each of you, and recommend education as an outstanding alternative to a mandatory helmet law. Let the bikers show you, as we have the last eight years, it is working.

Thank you very much.

Senator MOYNIHAN. Thank you, Mr. Farabaugh.

[A letter from the Motorcycle Safety Foundation regarding the testimony of Mr. Farabaugh follows:]

MOTORCYCLE SAFETY FOUNDATION

NATIONAL RESOURCE OFFICE
2 JENNER STREET, SUITE 150
IRVINE, CALIFORNIA 92718
(714) 727-3227
FAX (714) 727-4217

December 4, 1989

The Honorable John H. Chafee
Ranking Minority Member
United States Senate
Committee on Environment and Public Works
Washington, D.C. 20610-4175

Dear Mr. Chafee:

On October 17th, the Subcommittee on Water Resources, Transportation, and Infrastructure of the Committee on Environment and Public Works had a hearing on S. 1007. Testimony was given by Michael Wms. Farabaugh regarding the "National Highway Fatality and Injury Reduction Act of 1989."

In his testimony, Mr. Farabaugh stated: "I have been Chief Instructor for the Motorcycle Safety Foundation for 10 years and I'm the 5th ranking Chief in America. I have also served on the Motorcycle Safety Foundation's Curriculum Development Committee."

The statement that he is the "...5th ranking Chief..." is false. The Motorcycle Safety Foundation (MSF) does not rank the Chief Instructors that are trained and certified by the MSF. Mr. Farabaugh received his training in 1980. He is among over 250 Chief Instructors trained since 1979.

The term "Chief Instructor" is used to describe someone who has been specially trained by the Motorcycle Safety Foundation to conduct Instructor Preparation courses. These people must also maintain a level of activity to maintain their certification. Chief Instructors have no other status within the Foundation's many and varied programs. They do not speak for the Foundation nor act as it's agents in any way.

Mr. Farabaugh served on a "Curriculum Advisory Committee", not a "Curriculum Development Committee" as he has implied. The committee, and other panels like it were established by the Foundation to solicit input from a wide range of sources. Policy matters are determined solely by the Foundation's professional staff and our Board of Trustees.

The Honorable John H. Chafee
Page Two
December 4, 1989

The Motorcycle Safety Foundation has carefully developed its rider education curriculum materials with the support of substantial, carefully conducted research. While we firmly believe that riders will benefit from this training and that as a results crashes will be prevented, only helmets and other proper protective equipment can provide the needed protection to reduce the chance of death or injury when a crash occurs.

If you have any questions regarding this letter, please contact me at the letterhead address.

Sincerely,

Elizabeth A. Weaver

Elizabeth A. Weaver
Director, Education

EAW/lb

Senator MOYNIHAN. Now, Mr. Quellet, if you would please proceed.

STATEMENT OF JAMES V. OUELLET, SCIENTIST/RESEARCHER, MOTORCYCLE ACCIDENT RESEARCH PROJECT, UNIVERSITY OF SOUTHERN CALIFORNIA

Mr. OUELLET. Good morning. Thank you for the opportunity to be here. My name is James Ouellet and I am one of the authors of what is usually called either the Hurt Report or the USC Study on Motorcycle Accidents. The research was funded by the National Highway Traffic Safety Administration and was done in Los Angeles at the University of Southern California. Police and ambulance dispatchers notified us of motorcycle accidents and we raced out to the accident scenes and conducted detailed, in-depth investigations on 900 motorcycle accidents. The study was the largest on-scene, in-depth research of motorcycle accidents ever done. Because California has never had a mandatory helmet law, we saw hundreds of accidents which involved helmeted and unhelmeted riders. Our findings are documented in two volumes of our final report and in over a dozen scientific publications that followed.

The design of cars and motorcycles is fundamentally different so the strategies for injury reduction in a collision differ radically. In an automobile, the occupants are enclosed in a steel shell so the protection strategy is to keep them inside and to make the passenger compartment crashworthy.

Motorcycles have no passenger compartment and crash testing research in the early 1970s showed the infeasibility of applying automobile crash-worthiness strategies to motorcycles. The best strategy to protect the motorcyclist is to put the protection on the rider so that he can take it with him while he comes to a stop. The only truly effective protection now available to the motorcyclist is the safety helmet.

Since time is short, I will provide a very brief overview of some of our research findings as they relate to helmet use and performance. The information I have is presented in more detail in these handouts that I brought and I hope you will have a chance to take a look.

First of all, it was clear in our research that helmets offer very significant protection. When an accident occurs, an un-helmeted rider is nearly twice as likely to suffer some kind of brain injury and nearly two-and-a-half times as likely to be killed or disabled by brain injury. It takes a really violent collision to cause brain injury to a helmeted rider, but all too many un-helmeted riders suffer brain injury in low energy, low threat collisions, such as a fall and slide on the pavement.

Furthermore, our research team looked for but failed to turn up any evidence that helmets pose any kind of hazard to the user, either by increasing the likelihood of getting into an accident, or by increasing injuries when an accident occurs. The contemporary safety helmet offers substantial benefits and virtually no down-side hazard. All that protection doesn't have to cost a lot of money. A $30 helmet offers a great deal of protection, nearly as much as helmets costing five to ten times as much.

In Los Angeles, about half the riders you see on the street have the helmet on. Yet, we found a helmet was worn by only 40 percent of the riders involved in accidents. When we looked more closely at factors such as age, experience, education, and trip length, we found consistently that whenever accident risk was higher than expected, helmet use was lower than expected and vice versa. We found that motorcycle riding increases when temperatures go up, but helmet use decreases at the same time. Helmet use drops by about 40 percent among those foolish enough to drink before riding.

The point I am trying to make is that our research suggests that most riders wear a helmet sometimes, and they know they should. But they do a rather poor job of evaluating the actual risk of becoming involved in a collision. With mandatory helmet laws, helmet use usually exceeds 90 percent, compared to about 50 percent when helmet use is voluntary. Extrapolating from our research suggests that if all motorcyclists wore a helmet, motorcycle fatalities would be reduced by about 20 percent, and disabilities due to brain injury by even more.

Opponents of S. 1007 argue that what is really needed is more rider education. I agree that more education is needed, but I have serious qualms about how much it can accomplish. When a motorcycle and a car collide, we found it is usually because the car driver failed to see the on-coming motorcycle, which was usually being operated within the law. Motorcyclists, despite their image, are most often innocent victims in accidents. No matter how much education you pour into the rider's head, it is not going to overcome the inattentive, distracted behavior of some car drivers. For many accident situations the rider has about one to three seconds warning of an impending collision. Once a car begins its maneuver across the motorcyclist's right-of-way, there may be nothing the motorcycle rider can do to avoid a collision, no matter how skilled or well trained.

Ultimately, when everything has gone wrong and you find yourself somersaulting over the hood of a car like a rag doll and the ground is rushing up at your head, only one thing is going to save you and it is not more rider training.

Thank you.

Senator MOYNIHAN. We thank you very much, sir, for a very careful statement. We appreciate your work. It is obviously of great importance to this subject. Our Senators who have not been able to be here all morning because of other hearings are here now. Senator Jeffords, would you like to open the questioning?

Senator JEFFORDS. Thank you. First of all, I am a believer that education certainly ought to be a primary focus. I assume that the education called for in your statement would be to wearing a helmet. Thus, I don't know what was significant to your statement, other than the fact helmets are a good idea and that people who are educated and are smart wear helmets. Mr. Farabaugh, would you comment on that?

Mr. FARABAUGH. I would like to. The study he is quoting, the Hurt Study, I am very familiar with. I have taught it for a number of years. That study doesn't identify with his last statement.

Sixty-five percent of all fatalities in accidents in motorcycling are caused by the automobile driver. We are well aware of that. But one of the things that Harry Hurt and your study indicated to us that was very valuable information was that out of all of those accidents, 50 percent of them could have been avoided by the motorcyclists. There are three things you can do in an accident situation—you can stop, you can make an evasive maneuver, or you can do what the motorcyclists who isn't trained does—nothing except hit the vehicle. In the study that Harry Hurt did, including 900 accidents, he found that 50 percent of the motorcyclists did nothing and that most of those accidents could have been avoided. We took that information and went back and applied it to rider training. Rider training does change things. I just totally disagree with that last statement. Education gives you the available resources to maneuver a motorcycle and place it any place you want to place it, any time you want to put it there, and avoid the accident.

Senator **Jeffords**. There are a couple things I wasn't sure about. Can you tell me how many States have educational programs?

Mr. **Rasor**. I believe there are 34 that have some form of motorcycle rider education program currently. I think it is important to point out also that a comprehensive motorcycle safety program is not just limited to rider education. We would include motorist awareness in that, also. The same amount that motorcyclists pay for rider education would also pay for those motorist awareness programs.

The importance of educating motorcyclists to the role of alcohol and other substance abuse in accidents is critical to reducing motorcycle accidents and injuries. We believe that can be done through the educational process and it is imperative that it be done through the educational process. But motorcycle accident reduction is not limited to rider education. It is a comprehensive program.

Senator **Jeffords**. In your opinion, would it be more advantageous if you did use Federal funds to use those funds as an incentive to conduct educational programs rather than for sanctions requiring mandatory helmet laws?

Mr. **Rasor**. I think the role of the Federal Government in providing incentives for any program is probably questionable. We would certainly prefer to see it in education, but in our experience prior to 1975, when sanction powers were in place, we found very little Federal funds, primarily 402 funds, dedicated to motorcycle safety. As a consequence, States limited their activities in reducing motorcycle accidents to passing mandatory helmet laws. Since that time, it has been the responsibility of riders to provide the dollars necessary to provide those programs, not from the Federal Government but from motorcyclists.

Senator **Jeffords**. Thank you, Mr. Chairman.

Senator **Moynihan**. Thank you, Senator Jeffords.

Senator Durenberger.

Senator **Durenberger**. I have two questions. One just occurred to me Mr. Ouellet as you were testifying. The analogy you are using of the steel capsule in the automobile would lead me to believe that you would advocate banning convertible automobiles, is that fair?

Mr. Ouellet. It is my impression that ejection is a more common problem in convertibles and that when a car occupant is ejected, the probability of death is about 10 times as great as when they are retained inside the passenger compartment. As far as banning, I really have no comment.

Senator Durenberger. Can you just take a minute and describe further the typical motorcycle victim. You have already talked about the incidents of helmet use. What about motorcycle driver conditions, as with automobile drivers, were they drinking, or some other conditions that——

Mr. Ouellet. No, sir. There was relatively little drinking among automobile drivers who were involved in accidents with motorcycles. No more than what you normally see, which is perhaps about 10 percent of the accident population. Most often automobile drivers who were involved in a collision with a motorcyclist overwhelming, probably over 90 percent, stated they never saw the motorcyclist, he came out of nowhere going real fast. Overwhelming we heard that. There is either an enormous conspiracy out there or people simply over and over and over fail to see a motorcycle coming down the road, and sometimes when the motorcycle was the only vehicle coming down the road.

Senator Durenberger. Mr. Rasor has been kind enough to indicate that my own State of Minnesota is one of those which has chosen to put a great deal of emphasis on rider education, but they also have a helmet law. I think the helmet law applies to people 18 and under, which seems to me begins to get at the issue of experience versus inexperience. In my State and many other States in the country, you take a drivers test when you are 16 or something like and you get a license to do as you please for the next 7 years. You renew that license every 7 years, all the way up to probably age 100. If you know how to park your car and you know how to stick your right hand out the window, or I guess now we don't do that any more, you push the right lever down or the left lever up, and you can recognize yellow signs and red signs, you get to be an automobile driver. But it seems to me that most of the education programs that I am familiar with in terms of cycle rider education put a great deal more emphasis on the on-going education of the driver. Has that been your experience, Mr. Ouellet? I am comparing education that we provide as a society for the drivers of automobiles with the education that in many States at least is provided to drivers of motorcycles. Don't you see more educational activity taking place among cyclists?

Mr. Ouellet. There is more now, but often there is sort of self-selection in which the people who already are the least likely to get into accidents are the ones most likely to be going to education programs and the ones most likely to be wearing helmets. So many of the people we saw in motorcycle accidents were young kids who were not really a part of any identifiable group. They didn't subscribe to motorcycle magazines, it was just hard to pin them down. They just hopped on the motorcycle and went for a ride.

Senator Durenberger. Those are the 17- to 25-year-olds who are killing themselves in automobiles, too. That age category, it seems to me, is destroying itself with some regularity, whether it is on a motorcycle or in an automobile.

Mr. OUELLET. That is correct. But we also found in our research, and it is in the written handout on pages 9 through 13, that age and experience on motorcycles has a very mild affect on accident involvement, and that education and how far the rider was going have a far more powerful affect on whether you get into an accident. And that applies also on helmet use.

Senator MOYNIHAN. Long trips produce more accidents?

Mr. OUELLET. No. Trips under one mile have a much higher than expected frequency of accidents and a much lower than expected frequency of helmet use. Long trips have lower accidents and higher helmet use.

Senator MOYNIHAN. Could that be a function of density?

Mr. OUELLET. I think partly it is a function of expectation. You also see higher helmet use on freeways than you do on surface streets.

Senator CHAFEE. When you said education, you were referring to formal education as opposed to motorcycle training education, is that right?

Mr. OUELLET. That is correct. By that I meant formal education—how far the rider had gone in school. Also, in terms of education, one of the things we did find was that about 70 to 75 percent of the riders involved in accidents said that they wore a helmet sometimes or they wore a helmet most of the time. It was a small minority, about 25 percent, who said they never wore a helmet. But if I had a dollar for every rider who told me he wore a helmet all the time except the trip that the accident occurred on, I think I could take the committee out to lunch when the hearings are over.

Senator MOYNIHAN. Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman. Let me ask Mr. Farabaugh a question, and Mr. Rasor, also. In your sanctioned meets, do you require helmets or not?

Mr. RASOR. That's a very interesting question. The American Motorcyclist Association is, of course, a very large and ordered sport sanctioning body. Our rules of competition are made by our riders. It is very much a democratic process and our riders have elected to require helmets in their events.

Senator CHAFEE. So, when you have the requirement, it is not optional? Everybody has to wear a helmet, or not?

Mr. RASOR. According to the rules made by the riders, that is correct.

Senator CHAFEE. In other words, the person who wants to exert his freedom by not wearing a helmet is not permitted in the meet.

Mr. RASOR. That is correct.

Mr. FARABAUGH. If I may clarify. We're talking about racing with the American Motorcycle Association, a racing activity, sanctioned event, not an on-street, highway, governmental property-type use. We do not, nor does the AMA, require helmet use on highways. In a sanctioned racing event, the racers have decided that is a valuable tool for all of them to participate with.

Senator CHAFEE. How about in your training courses, Mr. Farabaugh, in your teaching do you stress helmets? What is your position?

Mr. FARABAUGH. Yes, sir, Senator Chafee. The rider education program curriculum of 18 hours dedicates about 45 minutes toward the educational process of all the necessary equipment. In addition to the use of helmets, we advocate the use of boots and gloves, pants, long-sleeve shirts. One of the reasons that we also require the use of all that equipment in a rider education course is the fact that slow speed and liability purposes, all of those things, equate better protection on a range. I would also like to point out in Harry Hurt's study that this gentleman has talked about, one of the things not mentioned is that in all of the people interviewed in accident situations by Hurt's study, he found that 92 percent of those people had no rider education—92 percent.

Senator CHAFEE. If 92 percent of those in this survey had no rider education, and you have been working with some vigor on rider education, presumably it is optional, can we come to the conclusion that rider education isn't going to solve all our problems?

Mr. FARABAUGH. Harry Hurt is involved in a study currently. But the Harry Hurt study we have been referring to is eight years old, and unfortunately it is the only study of that magnitude that is available to us now, except when the current one may be complete. The last eight years have been the most progressive for rider education. So, it has changed dramatically since then and our production and our numbers are up ten-fold since the Harry Hurt study came out.

Senator CHAFEE. Would you make rider education mandatory?

Mr. FARABAUGH. We have tried that in a couple of States. It is at a point right now where if we did we would get a lot of legislators in trouble. If you could provide us with some funding through this committee hearing to put a rider education facility in every high school in America and every college in America and/or in every DMV parking lot in America, I would endorse mandatory rider education. The funding for that would probably surpass any dollars that we could collect.

Senator CHAFEE. But you wouldn't view that as an infringement on the rights of the individual?

Mr. FARABAUGH. At this point in time, I would think it would be impossible because where rider education has been mandated, there just haven't been enough facilities. We need to provide the motorcycles, the gasoline, the insurance, the text books, the instructors, everything needs to be provided and paid for. Any time that you have to have somebody travel 50 to 100 miles to a rider education course, it becomes very unpopular. It would probably reduce overall the industry significantly to try and mandate it.

Senator CHAFEE. Thank you all very much for coming. Thank you, Mr. Chairman.

Senator MOYNIHAN. I wish to thank Mr. Farabaugh who has been very helpful. I think the real issue here is to reach a certain group of people who obviously enjoy motorcycles—they like to ride them and they like to ride them well. I am not going to tell you your business, wouldn't think of it, but you know if the word gets out that the really classy drivers, the real risk-takers wear helmets, it wouldn't be the worst thing. I mean, there is a class of risk-taker, I think we can all agree, and those are the type of people who operate tanks for the United States Army, and such. They are in the business to shoot at other tanks and be shot at by them. They all wear helmets and they don't apologize one moment.

One thing I would like to record, subject to confirmation. I am told that the Motorcycle Industry Council, which are the manufacturers, have endorsed Senator Chafee's bill. I would like to make that point for the record. This is always difficult for industries and it causes them all sorrow in the end. We forget that the Interstate Commerce Commission was set up in the 1880s not just to regulate prices but, as much as anything else, for safety. Railroads would not use the Westinghouse Air Brake. The saying used to be "as long as brakemen are cheaper than the Westinghouse Air Brake, the railroads are going to do without." It was safety regulation that got the ICC. A century after that, government regulation slowly choked that industry to death, but they asked for it.

The American Automobile Manufacturers, exactly the same record. I remember—if I could ask my colleagues to indulge me—on the day that I was asked to join the Kennedy Administration, I was at West Point at a meeting on this subject and the automobile companies were there saying, "no problem—nothing we can't do." "It is not the car, it is the nut behind the wheel," and that kind of thing. And I said, you know, keep it up and in a decade's time you are going to end up regulated by the Federal Government. I will say this, I came within one word of getting the name of the agency that would regulate them—I called it the National Highway Safety Administration, and it is the National Highway Traffic Safety Administration—I left out Traffic. They didn't know what I was talking about and now they are a regulated industry. They had the option to do it themselves and they chose not to.

So I am pleased to see that the motorcycle industry is different. Here is the statement by them, which I will put in the record, by Mr. Melvin Stahl (see p. 348), and I gather that this statement endorses the concept of Senator Chafee's bill.

I do note that in your study, Mr. Ouellet, the use of helmets with Japanese manufactured motorcycles is markedly higher than in the American Harley Davidson.

Mr. OUELLET. That is correct.

Senator MOYNIHAN. The Kawasawki is twice the Harley Davidson.

Mr. OUELLET. That's correct.

Senator MOYNIHAN. I can think of a range of interpretations, but I find that a little disconcerting.

Mr. OUELLET. I might be able to provide you with one.

Senator MOYNIHAN. Would you do so, sir.

Mr. OUELLET. Yes, sir. Harley Davidson has a particular mystique and people ride Harleys because they want to ride a Harley and there is I think an image that goes along with Harleys. Often, when we would interview a rider and ask him if he was wearing a helmet, the answer was no, and if you asked him is there a reason you didn't have the helmet on, we'd sometimes get this incredulous slack-jawed look. The rider might say, you don't wear a helmet when you ride a Harley. That's part of the reason I think that some of it is so low. I don't have as quick an explanation of why it was so high with Kawasakis.

Senator MOYNIHAN. I think they would be advised to think about an advertising program that gets a couple of Master Sergeants from the United States Tank Corps saying "I am a Master Sergeant, I drive a Harley, and I wear a helmet. Any Private I find without a helmet has got a lot of problems with me."

Thank you gentlemen very much. We appreciate the testimony. We learned a lot and we hope to continue learning.

We have one final panel this morning. First of all, is Senator Waddell here? Good morning, Senator. Your colleague, Senator Warner, was here earlier and he wanted to be remembered to you. He had to go off to the same duties that you have been off doing. Our final panel consists of the honorable Charles Waddell, who is Chairman of the Transportation Committee of the Senate of the Virginia General Assembly; Mr. Paul Jones, who is the Governor's Safety Representative for North Carolina; and finally Mr. Charles Spilman, who is President of Traffic Safety Now, from Detroit, Michigan.

I want to thank our audience which has been very patient, and the television cameras, the press, and the radio. I would like to ask our guests who are leaving if they would leave expeditiously. Or else, if they are not leaving, would they be kind enough to take their chairs.

Senator Waddell, good morning and again welcome.

STATEMENT OF HON. CHARLES L. WADDELL, CHAIRMAN, SENATE TRANSPORTATION COMMITTEE, VIRGINIA GENERAL ASSEMBLY, REPRESENTING THE NATIONAL CONFERENCE OF STATE LEGISLATURES

Senator **Waddell**. Good morning. I want to extend to the senior Senator from Virginia my gratification for his kind remarks.

Senator **Moynihan**. I will certainly do so. I have to make the additional statement that you are not appearing just for yourself but for the National Conference of State Legislatures, so you are doubly welcome on that score.

Senator **Waddell**. Thank you. Mr. Chairman and members of the subcommittee, I am State Senator Charlie Waddell. I am appearing before you today on behalf of the National Conference of Stat Legislatures.

I appreciate this opportunity to comment on the National Highway Fatality and Injury Reduction Act of 1989. I have submitted my statement for the record and would like to summarize my remarks.

During my 18 years in the Virginia Senate, I have been a strong supporter of State-enforced transportation safety laws. I was the original sponsor of legislation to require seat belt usage, and I continued my support of efforts to adopt mandatory seat belt provisions until we were successful. Since Virginia's law became effective January 1, 1988, we have experienced an over-all decrease in occupant fatality rates.

As a strong advocate of transportation safety, I commend Senator Chafee and members of this subcommittee for your support of the well-intended legislation. However, as a State legislator, I am particularly concerned about the imposition of Federal sanctions. The States already face the prospect of losing Federal Aid Highway funds in more than a dozen areas of compliance. This approach has proven to be anathema to State legislatures who are simply looking for solutions to the same problems recognized by Congress. NCSL has long-standing policy opposing the use of Federal sanctions.

A State must be in a position to determine the best utilization of limited resources. Adding to the list of ways in which a State can jeopardize funding for transportation, including safety, only limits the State's ability to find the most effective combination of laws, regulations, and education efforts to encourage driver and passenger safety.

As I stated earlier, I am a strong advocate of transportation safety measures. I have no intention of arguing the safety consequences of use versus non-use of safety restraints or helmets. I believe the proponents of the evidence to date comes down convincingly on the side of usage. What I would like to direct my remarks to are the States 'experience in this regard, particularly Virginia's, and the need for Federal legislation which encourages effective, although varied, State approaches to increasing vehicle safety.

To my knowledge, all 50 States have some type of child restraint laws in effect. At this time, some 34 States and the District of Columbia have mandatory seat belt laws. While the State record on motorcycle helmet requirements is not as impressive—as many as 47 States at one time have had comprehensive motorcycle helmet laws.

Careful examination of the respective laws of the States demonstrates that States have very different approaches to the waivers permitted—the fines assessed, the enforcement mechanism, and so. In Virginia, for example, our seat belt law imposes a $25 fine on violators, but exempts postal and newspaper carriers, certain law enforcement officials, and those with medical justification. We provide for secondary enforcement only, assess no traffic points, prohibit mitigation of damages, and include an educational program, which is important. While most States incorporate educational efforts, only a few provide for primary enforcement and mitigation of damages.

Prior to the adoption of our laws, seat belt uses had doubled as a result of increased educational activity. A comprehensive effort in this regard appears to be the most effective. But the imposition of Federal requirements, as to the nature of this effort, would surely undermine the State's ability to tailor the seat belt enforcement programs to best address their particular driver population.

I want to expand here on the need for comprehensive safety efforts. I think it is imperative that our attention is placed on end results, not specific means and mechanisms of accomplishment. The grant provision in S. 1007 in the latter years do this by specifying criteria which acknowledges State improvements in compliance levels.

There are problems inherent to being myopic about the approach taken to improve driver safety. Such was the case over the last few years when the U.S. Department of Transportation made the inclusion of passive restraint systems in new automobiles dependent on the failure of the States to adopt mandatory seat belt laws. While there are some who may view this contingency as the motivating factor behind State adoption of seat belt laws, what purpose does it serve to pit complimentary safety restraints against one another. California's law specifically recognized that the State's mandatory seat belt statute was intended to compliment, not substitute, any Federal requirements for automatic restraints. Several States, in recognizing this dilemma, purposefully drafted their seat belt legislation so they could not be counted as being in compliance. Others included a sunset provision to repeal the seat belt law if the Secretary's passive restraint order was rescinded or if it went into effect.

I do not believe that I could significantly add anything to the testimony presented to this subcommittee on child restraint laws. The fact that all States require children under a certain age to be properly restrained in automobiles certainly speaks to the priority that the States have assigned this safety issue. The State of Virginia has experienced no deaths of children properly restrained so far this year.

I would like to spend the remainder of my time addressing the issue of mandatory motorcycle helmet laws. I can understand where the members of this subcommittee may have particular concerns in this area. At one time, 47 States had comprehensive helmet laws. With the reduction in Federal requirements, many States have in turn repealed laws requiring helmets for all riders. The State of Virginia has retained its mandatory helmet law. However, we have focused much of our attention, Mr. Chairman and members of this subcommittee, on educational activities. The Virginia Rider Training Program allows for the training to be used in lieu of the licensing skills test. We have found this to be an efficient use of resources. In the first three years of the VRTP, motorcycle accidents and fatalities decreased by one third.

In this legislative year alone, over half of the State legislatures have had legislation proposed to modify their helmet or restraint laws in some manner. This indicates to me the high priority and attention that States place on this issue. Any Federal legislation should seek to encourage this endeavor—this legislative struggle to find just the right mix of requirements and incentives to result in increased rider safety. In many instances, States are already exploring safety requirements for a variety of vehicles and riders not addressed under any Federal legislation or regulation.

The challenge in all cases, however, is in maintaining compliance with all safety standards. There appears to be a leveling off of compliance over time which undermines the intent of the safety requirements. Our compliance rate has dropped from 61 percent to 55 percent since the enactment of our law. I understand that is pretty standard. I hope that Congress will continue to work with the States to compliment and supplement on-going motorist safety initiatives.

As this subcommittee deliberates on this proposed legislation, I would like to suggest that members of this subcommittee address this bill as they would a seat belt. In doing so, we can all rest assured that it will be adjusted to fit its intended beneficiaries.

Thank you, again, Mr. Chairman and members of the subcommittee for your courtesy in listening to me.

Senator MOYNIHAN. That was very eloquent and you couldn't be kinder, sir. Our practice is to hear each of the panelist and then have questions afterwards. So Mr. Jones you are next.

STATEMENT OF PAUL JONES, GOVERNOR'S SAFETY REPRESENTATIVE FOR NORTH CAROLINA, REPRESENTING THE NATIONAL ASSOCIATION OF GOVERNORS' HIGHWAY SAFETY REPRESENTATIVES

Mr. JONES. Mr. Chairman, thank you. My name is Paul Jones. I am Director of the Governor's Highway Safety Program in North Carolina and the Governor's Representative for Highway Safety, and also Vice Chairman of the National Association of Governors' Highway Safety Representatives.

Senator MOYNIHAN. So you are here on behalf of the Governors?

Mr. JONES. Yes, on behalf of the Association. Mr. Chairman, if I might make a personal comment here for a moment. I would like to thank Senator Chafee for his remarks this morning about the economic side of this issue. I don't look at it as a rights issue. I look at it as a taxpayer issue and a health issue. I think that if those policymakers and taxpayers out there really understood the magnitude of the issue, understood the cost of the issue, that once they do understand the true magnitude, they would be outraged at the cost that we as taxpayers and consumers of services are having to pay for the trauma that is being created on our highways. I thank you for those comments. Too bad that those comments won't lead the evening news tonight because they are well worth making the evening news.

Mr. Chairman, I am not going to review our statement, which you have a copy of before you, on the cost of the injuries or the effectiveness of the protection systems that are in place in the country, or the motorcycle helmet laws which are on the books, or the need to further reduce the number of fatalities or injuries which are occurring on our highways. Despite the proven effectiveness of the State laws out there, we still believe that there is a need for a Federal occupant protection program or initiative to speed up the State efforts to strengthen their laws.

The National Association of Governors' Highway Safety Representatives, or NAGHSR for short, strongly supports the performance-based incentive grant program that is in the bill. We think this approach is just as effective as sanctions in influencing State behavior.

Senator, as I said, we commend you for your efforts in introducing the bill, and Mr. Chairman and Senator Wilson for your cosponsorship of such an innovative approach to the issue.

The National Association of Governors' Highway Safety Representatives does not—and I repeat, does not—support the sanction provisions of S. 1007 and urges that they be deleted from the bill. We believe that sanctions would be counter-productive.

We support the specific eligibility criteria outlined in the bill, as well as the proposed funding source and level of funds. We recommend that the language be added to the bill requiring the National Highway Traffic Safety Administration, NHTSA, to expedite the promulgation of implementation regulations.

We also support the proposed $5 million occupant protection and motorcycle safety education and information program. We believe those funds can be used to supplement on-going NHTSA education programs and to help spread the message about the need for a combined use of passive restraint systems and automatics.

We recommend that the matching share for incentive grants should parallel the matching share in the basic Federal Highway Safety Grant Program, which I might add has been in a declining state over the past few years. This would keep the incentive grant program consistent with the basic program, maintain the seed money principle upon which the basic program is structured, and facilitate a more comprehensive and coordinated approach at the State level.

We recommend that the incentive grant program be authorized for five years instead of the normal three in order to encourage better long-range planning and bring greater stability to the program.

We recommend that recipients be required to spend a portion of their second through fifth year of grant funds on the development and implementation of accurate and representative belt use surveys. This would greatly improve the quality and availability of data, which would in turn help us understand whether or not we are meeting our national and State occupant protection goals.

We also recommend that a number of activities be added to the list of eligible activities that are specified in the bill. This would include worksite information and education programs, combined enforcement and education programs, training programs for educators and health care professionals, and development of motorcycle training and licensing materials.

Finally, we recommend that same Federal program administrative and evaluation requirements that apply under the basic Federal Highway Safety Grant Program also apply to the incentive grant funds, and that States be allowed to apply for incentive grants as part of their annual Highway Safety Plan (HSP), which is required under the basic program.

Mr. Chairman, thank you on behalf of the Governors' Highway Safety Representatives and for the opportunity to pass along a personal note.

Senator MOYNIHAN. Thank you, sir. That was very concise and very helpful to us.

Now, Mr. Spilman, we come finally to you.

Senator CHAFEE. Mr. Chairman, I just would point out that Ms. Sharon Brinkworth is here from Rhode Island. I want to greet you, Ms. Brinkworth, and extend to you our appreciation. I visited one of our college at home where she had set up a crash test vehicle in which you were strapped in, this thing shot forward, and you got the impression what it is like to be in a crash. It was a memorable occasion.

What was the speed of that, Ms. Brinkworth? It was relatively mild, wasn't it?

Senator MOYNIHAN. The point is that the species was designed to go at about 1.1 mile an hour. On a horse, very occasionally, 4.5 miles an hour—very occasionally and a very good horse. Ten miles an hour is 10 times faster than this system was designed for. Walk into an open door at night when the lights are out and you are moving at about one-tenth of a mile an hour and find out how much of a bang you get, then you think about what 20 miles an hour is.

Mr. Spilman, welcome.

STATEMENT OF CHARLES L. SPILMAN, PRESIDENT, TRAFFIC SAFETY NOW, INC.

Mr. SPILMAN. Thank you very much for the opportunity to be here today. My names is Charles Spilman and I am president of Traffic Safety Now, Inc., TSN.

I am here today to state TSN's support for S. 1007, the National Highway Fatality and Injury Reduction Act of 1989. We support this bill because our experience has shown that State safety belt use laws are the most effective way to save lives and reduce injuries on our highways. In addition, TSN recognizes the lifesaving benefits of motorcycle helmet use.

TSN was founded in 1984 by the domestic automobile manufacturers—Chrysler, Ford, General Motors, and American Honda, and at that time Volkswagen. TSN's main goal is to increase safety belt use by encouraging States to enact strong safety belt use laws.

TSN has spent the last five years doing exactly that. We have developed a network of coalitions, and I might add there are six other State coalition directors with us here today. We have developed this network of coalitions in all 50 States and the District of Columbia and we enjoy the support of more than 500,000 volunteers across the country.

During the past five years, we have supported the passage of legislation in 34 States plus the District of Columbia. We have conducted a variety of public information and law enforcement programs in every State. During this period the national safety belt use rate has increased nearly 400 percent—from just 12 percent in 1984 to a nationwide use rate of 47 percent today.

Safety belt use is 40 percent higher in States with safety belt use laws than in States without safety belt use laws.

Today, 86 million more people are buckling up than were before the first safety belt use law was passed. And today, more than ever, safety belt use is popular and there is widespread support for safety belt use laws.

Traffic Safety Now supports the grant program provided in this bill. We believe it will encourage States which have taken the initiative to pass safety belt use laws to further intensify their efforts to increase belt use.

We recognize and support the annual belt use rate goals established for States in this legislation. We also agree that community-based programs to educate the public and encourage enforcement of belt use laws are important provisions in this bill. As an added footnote, we would support mandating safety belt use for occupants of light trucks and vans.

Extending the protection offered by safety belt use laws to all Americans is certainly achievable. We believe this bill will help us reach that goal. We hope the incentives contained in S. 1007 will provide the momentum needed to get belt use laws enacted in the remaining 16 States.

Though the public opinion, fatality, and injury-reduction figures are persuasive, they are not the most potent arguments to illustrate why S. 1007 should be passed. The determining factor is—and well it should be—the human factor. As president of TSN, I hear stories from people almost every day about traffic accidents and how they were saved because they were wearing a belt. They didn't wear that belt, many of them say, before the passage of safety belt use laws in their States. I also speak to people who have lost loved ones because they failed to buckle up. That part of my job helps me to remember how important belt use laws really are.

We thoroughly support S. 1007. The enactment of this legislation is very important because as new automobiles are offered for sale in this country, they will have automatic occupant restraint systems. And all of these systems are dependent on the use of safety belts to achieve a maximum benefit. We are confident this bill will motivate the 16 States without safety belt use laws to pass effective legislation in the near future. We also believe it will further increase State efforts to raise safety belt use rates.

Thank you very much.

Senator **Moynihan**. Thank you, Mr. Spilman.

Senator Chafee.

Senator **Chafee**. Thank you very much. Senator Waddell, first of all I want to thank you very much for taking the trouble to be here. I think the points you made were good ones. I would just stress that in the legislation it does provide for variances amongst the States. In other words, it doesn't require a uniformity. For example, it doesn't say it has to be primary versus secondary. It does permit the waivers. I think you mentioned in Virginia you have waivers for postal employees and for newspaper delivery folks, and things like that. So I think many of those concerns that you voiced are not present in the legislation as we currently have it. Another point, we don't, for example, include back seats under this legislation. What we do require is that the State have a seat belt law, and, as I mentioned, there is considerable latitude there.

The other point I would make concerns the incentives. The problem we have discovered with incentives, it is hard to reach the amount of incentives that is required to get a State to act. The amount that we can put in there and authorize can be high, but the amount that the appropriators will appropriate—and I guess nobody knows this better than you, Senator—is not always what we want. You are familiar, of course, with our system here with the difference between authorization and appropriation. So those are very real problems that we face in the particular area of incentives.

Senator **Waddell**. I can appreciate that, Senator. The States are just concerned about the sanctions, basically.

Senator **Chafee**. Well, that's the very point, of course, that Mr. Jones made. All I can say is that we have sanctions now on the drunk driving——

Senator **Waddell**. Also the drinking age, I believe, Senator.

Senator **Chafee**. Yes; drinking age and the speed limit situation, those we do have sanctions for. And, of course, the sanctions were very effective on the drinking because, as I understand, every State has passed it except Puerto Rico, for some peculiar reason, and thereby they are losing some funds.

I do want to thank you, Mr. Chairman, for handling this. We have had 14 witnesses and we have done it in 3 hours exactly. You started this meeting as we say in the Navy at 0900.

The other groups that wish to submit testimony, as I understand, they will be permitted to do so.

Senator MOYNIHAN. They certainly will and we would welcome it.

This is something I have an opportunity to say on the record and I am going to use it. It is so important that the motorcycle manufacturers have supported this legislation and now the automobile manufacturers had done so. Mr. Spilman, if you knew what a difference 20 years makes. I left the Johnson administration in 1965 and was asked to become the director of the Joint Center for Urban Studies of MIT and Harvard. The General Motors Corporation said that if I got that job, MIT and Harvard would never get a nickel of their money. And Nathan Pusey chose not to hear them—he just didn't hear it, that's all. That took a lot of style in a university president not to let that bullying take place, and he didn't make a big issue of it. That was at the time when we were not trying to demonize this subject, we were just trying to be thoughtful and research oriented, nothing more, but that was enough to get you into that kind of thing. That is no more and that is good.

Mr. SPILMAN. Mr. Chairman, I think with the passing years we all gain wisdom.

Senator MOYNIHAN. Yes. Institutionally, yes, you're right.

Senator and Mr. Jones, we will attend with great care your very thoughtful judgments. Mr. Jones, you have been with this subject——

Mr. JONES. Amendments are possible here, aren't they?

Senator MOYNIHAN. Amendments are possible.

And discussions are in order. We will not just leave it here. We will want to talk with you and your respective associations as we move forward. And we are going to move forward.

Senator WADDELL. Mr. Chairman, could I recognize one lady, she may have testified. Mrs. Barbara Bolton, from the Virginia Auto Safety Alliance, has been one of the main thrusts behind our legislation in Virginia.

Senator MOYNIHAN. Mrs. Bolton, we are very happy to have you here. I see a little cluster of your group there in the back and you are all wearing friendly looking badges.

Mr. SPILMAN. Mr. Chairman, if I may, I would like to introduce the coalition representatives to the committee.

Senator MOYNIHAN. We would be pleased if you would.

Mr. SPILMAN. Thank you. With us today in the hearing room are Kathleen Teague, of the Florida Coalition for Auto Safety, Barbara Bolton, from the Virginia Auto Safety Alliance; again, Sharon Brinkworth, from the Rhode Island Safety Belt Coalition; John Harbinson, from the Minnesota Seat Belt Coalition; Beth Dunlop, of the North Dakota Safety Belt Coalition; Robin Markowicz, with the New York Coalition for Safety Belts; and Caryle Bennett, with the Capital Coalition for Safety Belt Use in Washington, D.C.

Senator Moynihan. The committee welcomes you. We also thank our guests who have been very thoughtful and attentive. We especially thank our witnesses. And we thank our staff. The record will remain open for 30 days for any comment.

[Whereupon, at 12:01 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record and the bill, S. 1007, follow:]

TESTIMONY

of the

AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

before the

SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

U.S. SENATE

on

"THE NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989"

Presented by

ROBERT K. ANZINGER, MD, FACEP
PRESIDENT

October 17, 1989

Mr. Chairman, I am Robert Anzinger, President of the American College of Emergency Physicians (ACEP) and a practicing emergency physician from River Forest, Illinois. I appear today on behalf of the more than 13,000 members of the College to express our support for S. 1007, the National Highway Fatality and Injury Reduction Act of 1989. Appearing with me is Thomas Nickels, ACEP's Director of Government Affairs.

As an organization of physicians actively engaged in the practice of emergency medicine, we see the tragic results of motor vehicle and motorcycle accidents both in adults and children twenty-four hours a day. The injuries and fatalities that result from these accidents are at a shockingly high level in this country. From witnessing such human loss and tragedy in emergency departments, we have come to the conclusion that far more strict traffic safety measures must be mandated and enforced.

For several years, ACEP has been supportive of legislation to require motorcyclists and riders on all other similar vehicles to wear helmets, and motor vehicle drivers and passengers to wear safety belts. Such requirements would doubtlessly decrease the number of deaths and serious injuries on our highways. Frankly, we are appalled that many states have not adopted such obviously beneficial laws. Even more regrettable, however, is my own state of Illinois, where the legislature recently repealed the motorcycle helmet law.

Consequently, we are in support of the proposed legislation to require all states to pass safety belt and motor vehicle laws or lose up to ten percent of their federal and highway construction funds. We also support provisions of the bill to include an incentive program which will provide funds for education and for the enforcement of these laws.

The statistics on the number of people killed on our highways is staggering. In 1988 there were over 47,000 motor vehicle deaths, while an estimated 300,000 Americans were injured seriously enough to require hospital treatment. These statistics simply cannot be ignored.

Because of these figures, 31 states and the District of Columbia have enacted mandatory safety belt laws and motorcycle helmet laws. It has become apparent that safety belts and motorcycle helmets save lives and reduce serious injuries. Over 19,000 people have been saved by safety belts and motorcycle helmets in the last five years, according to the National Highway Traffic Safety Administration (NHTSA).

But much more needs to be done. Motor vehicle injuries and fatalities are costing us billions of dollars in lost productivity, medical costs, insurance and other costs. According to the National Highway Traffic Safety Administration, if all front seat occupants of passenger vehicles had worn safety belts and all motorcycle riders had worn helmets in 1987, these costs would have been reduced by over $7 million for that year. Over 12,000 lives would have been saved and 437,000 injuries would have been prevented.

ACEP believes that there is no individual "right" to behavior such as the refusal to wear seat belts and motorcycle helmets, which significantly increases the probability of death or disability at the expense of others in society who must share the costs of hospitalization, disability payments, health, life, and accident insurance, tax revenue losses, or emotional costs to family, friends or the community-at-large. This does not even take into account the costs to society in terms of the resources that are inappropriately diverted from the health care system, and the costs to the federal government, through such programs as Medicare and Medicaid.

In addition, those individuals who could have prevented exposure to severe injuries by using safety belts and motorcycle helmets further exacerbate the problem of emergency department overload and closures. Hospital overcrowding, and the resultant congestion and holding of patients that occurs in emergency departments in many parts of the country, is severely limiting the public's right to timely access to emergency medical care and the quality of that care. By requiring usage of safety belts and motorcycle helmets, we can partially address the national trend in the last few years that has clearly resulted in an increased utilization of the emergency department.

We not only need federal safety laws to reduce the morbidity and mortality rates stemming from motor vehicle accidents, but to permit reallocation of society's resources to more benefical programs. ACEP is strongly committed not only to federal legislation on these issues, but also to the following:

- Public education and awareness programs on the use of safety belts and helmets;

- Education and awareness programs for physicians and other health professionals; and

- Research to determine the causes of automobile accidents morbidity and mortality, to identify measures to reduce this morbidity and mortality, and to monitor the effectiveness of public education programs and the impact of legislation.

I believe that we can prevent many accidents from happening through public education and research efforts as described above. To promote these efforts, ACEP is developing a five-year plan to:

- Analyze the impact of preventative strategies in emergency medicine in terms of dollars and volumes of patients;
- Analyze from the literature known effective strategies for reducing illness and injury; and
- Developing policies and strategies to affect change in the patterns of illness and injuries seen in emergency departments.

As I mentioned previously, I am an emergency medicine specialist from River Forest, Illinois. As a board certified emergency physician with over 20 years of experience practicing emergency medicine, I unfortunately am all to familiar with the statistics associated with motor vehicle and motorcycle accidents, but also with the realities of the pain and suffering involved when an individual is injured or killed. Such firsthand experience in treating those injured in motor vehicle or motorcycle accidents, or trying to console the families of individuals killed in these accidents, prompted me to come before the subcommittee today to urge support for Mr. Chafee's bill.

I would like to provide three specific incidents involving motor vehicle and motorcycle accidents with which I have been personally involved as a treating emergency physician:

- I treated a mother and her child who were broadsided in the car on the driver's side. Fortunately, the mother's life was spared because she was wearing her safety belt. She only received a fractured femur and pelvis. Her child was untouched because she was restrained in a car seat.

- The second accident involved a couple in their sixties who received only minor injuries (contusions in the chest from the seat belt shoulder strap), despite the extensive damage to the car due to a head-on collision. Ironically, this couple admitted to me that they would not wear their safety belts if there were not a law requiring it, even if it could have saved their lives, as in this case.

- The third accident occured when a deer ran into the road and was hit by a motorcycle. The rider, was thrown from the motorcycle, and sustained a basal and sinus skull fracture. I am convinced that the injuries sustained by the motorcycle rider would not have been as serious if he had been wearing a helmet.

In conclusion, Mr. Chairman, we urge the subcommittee to expeditiously approve S. 1007 in order to require all states to pass safety belt and motor vehicle laws. The evidence is clear that safety belts and motorcycle helmets save lives and reduce serious injuries, which in turn reduces the costs to society and the health care system that result from car and motorcycle accidents. We look forward to working with you toward enactment of this critically important legislation. Without a doubt, your efforts will help reduce the national tragedy of highway deaths and accidents.

STATEMENT OF THE
AMERICAN TRAUMA SOCIETY
AND THE
AMERICAN COLLEGE OF SURGEONS

Before the Environment and Public Works Committee

Subcommittee on Water Resources, Transportation, and Infrastructure

On S. 1007

"The National Highway Fatality and Injury Reduction Act of 1989"

Presented by

Carl P. Valenziano, MD, FACS

Director, Trauma Services

Bay State Medical Center, Springfield, Massachusetts

October 17, 1989

Mr. Chairman, Senator Chafee, and Members of the Subcommittee, I am Carl P. Valenziano, MD, F.A.C.S., Director of Trauma Services at Bay State Medical Center in Springfield, Massachusetts. Bay State Medical Center is a 900 bed teaching hospital. The hospital operates a Level I trauma center that treats 1,000 patients annually from a multi-state area including Connecticut, New York, and Vermont. At least 80 percent of the trauma we see is a result of blunt injuries, that is the kind of trauma that most typically results from a motor-vehicle crash.

I am pleased to appear before you today on behalf of the American Trauma Society and the American College of Surgeons. Both organizations share a deep interest in furthering efforts to prevent injury and we strongly support S.1007, "The National Highway Fatality and Injury Reduction Act of 1989," for that reason.

In its 1985 report, *Injury in America*, the National Academy of Sciences pronounced injury as the nation's number one public health problem. It is the leading cause of death of Americans from age 1 through 44. Up to age 34 injury kills more people than all other diseases combined, and up to age 30 motor-vehicle crashes alone are the leading cause of death.

Among all causes of injury for all age groups, motor-vehicle crashes are the leading cause, resulting in nearly 50,000 deaths annually. Another 1.8 million people are disabled each year, 150,000 of them permanently, due primarily to head or spinal cord injuries. Injury is also the nation's most costly health problem. In 1987, unintentional injury alone cost the U.S. $133.2 billion in medical expenses, lost wages, property damage and other indirect costs. But again, among all causes of injuries, motor-vehicle crashes are also the most expensive. In 1987 they cost the U.S. in direct and indirect costs nearly $65 billion, more than any class of disease except cancer.

Finally, injury is also the leading cause of lost pre-retirement years, causing greater worklife losses than cancer and cardio-vascular disease combined. Each year, the U.S. forfeits four million years of productive work due to injury, making it a factor in our ability to compete successfully in the international marketplace.

The costs associated with injury are contributing to the financial stress our health care delivery system is experiencing, particularly in emergency departments and trauma centers where an increasing number of trauma patients are uninsured.

The most typical motor-vehicle crash victim is an adolescent or young adult male. Of the nearly 46,000 motor-vehicle fatalities occurring in 1985, 42 percent of them occurred among the 15-24 age group, 74 percent of whom were male (1).

Injury data that provide information about seriously injured individuals who survive long enough to be admitted to a hospital reflect similar findings. The Major Trauma Outcome Study (MTOS), coordinated by the Committee on Trauma of the American College of Surgeons, contains over 120,000 cases making it the largest existing contemporary database on trauma patients. An analysis of over 80,000 of the MTOS cases indicates that fully 30 percent are between age 15 and 24, and that they are overwhelmingly male (1). Fifty-four percent of this age group was injured in a motor-vehicle crash, 43 percent in passenger car crashes and 11 percent in motorcycle crashes (1).

Unfortunately, this same demographic group that is at high risk of becoming seriously injured is also more likely to be uninsured. Almost 98 percent of workers under age 18 and 76 percent of workers age 18-21 are unlikely to have job-related health insurance (2). Many are unlikely to have coverage from other sources, particularly low wage workers and young adults over age 18, who are frequently no longer covered by their parents' insurance policies (2). Most states mandate liability coverage for motor-vehicle operators, but not health insurance coverage. Health care providers may or may not be able to recover reimbursement through liability insurers, depending on the nature and status of the coverage, and on state requirements. The process is usually a litigious one resulting in a reimbursement pursuit which is costly, time-consuming. Extended delays in payment, which often persist for years, result in a final payment that has been significantly reduced by legal fees. Even then, payment frequently goes to the patient and pursuit must often begin all over again.

To make matters even worse, members of this same demographic group are also at higher risk for not wearing seatbelts or motorcycle helmets (3,4). This not only is more likely to result in death, but in very serious, extremely costly injuries. Between 1966 and 1975, when 47 states required helmet use by motorcycle operators, the death rate fell nearly 100 percent from 13 deaths per 10,000 motorcycles down to 7. And between 1975 and 1983 when 28 states weakened or repealed their helmet laws the death rate increased nearly 40 percent.

A more detailed look at the impact of motorcycle helmet laws and their consequent repeal has just been completed by Dr. Norman McSwain, Jr. of Tulane University School of Medicine and Anita Belles of South West Texas State University (5). These researchers looked at the medical and financial impact of repeal of a motorcycle helmet law in Kansas and reinstatement of a helmet law in Louisiana from 1981 through

1987. They also analyzed these same impacts using current FARS data (Fatality Accident Reporting System) in 12 states (including Kansas and Louisiana) and five countries. I would like to briefly summarize the main findings of their study.

The McSwain/Belles analysis indicates that without motorcycle helmet legislation the rate of riders who wear helmets drops from 99 percent to 50 percent. With reinstatement of a helmet law, the user rate rises to greater than 95 percent.

The average hospital stay of helmeted motorcycle riders is 5.8 days, while the average stay for non-helmeted riders is 11.8 days. The fatality rate per 1,000 registered motorcycles is 1.6 for helmeted riders and 6.2 for non-helmeted riders. McSwain and Belles found that with the reinstatement of a motorcycle helmet law in Louisiana, as well as a few other states, changes occurred in fatality rates, injury rates, critical injury rates, specific head injury risk, length of hospital stay, and hospital costs. Specifically, the fatality rate for motorcycle operators dropped 62 percent in Louisiana, 66 percent in Colorado, and 42 percent in Oklahoma with reinstatement of helmet laws. In addition, the fatality rate per 1,000 motorcycle accidents dropped 28 percent, from 42.7 for non-helmeted riders to 30.8 for helmeted riders. Critical injuries were reduced by 44 percent. The risk of sustaining a head injury was determined to be 2.07 times greater for a non-helmeted rider than for a helmeted rider and the risk of a fatal accident was found to be 1.44 times greater respectively.

The researchers found that medical costs for hospitalized motorcycle riders declined almost 50 percent between 1981 and 1987 in Louisiana following reinstatement of a helmet law in 1982. Length of hospital stay decreased 37 percent during this same period with an 80 percent decline in patients staying longer than 20 days. Injured motorcycle riders were disabled an average of 26.7 days in Louisiana versus 51.1 days in

Kansas where a helmet law was not in place. Medical costs for injured motorcycle riders were, overall, more than 300 percent higher in Kansas than Louisiana.

McSwain and Belles conclude that, based on 1989 dollars, $121 million of additional acute and rehabilitative medical care per year in the U.S. is due directly to non-use of motorcycle helmets. In addition, since 60-82 percent of non-helmeted riders have no health insurance, they conclude that $4.9 billion was absorbed by the public in the form of increased taxation, higher insurance costs and lost tax revenue.

At my own hospital we have seen the difference a helmet can make. A typical accident involving a motorcycle operator involves a man in his mid-twenties who strikes another vehicle that stopped suddenly or turned in front of him. He is ejected over the other vehicle, and hits his head against something, or else he lands or slides on his head, with resulting major head injury. The most memorable cases are those where this same kind of accident occurred, but because the motorcycle operator was wearing a helmet, the helmet took the brunt of the crash. In one instance, a helmet was scraped all the way through to the padding, but the young man suffered only minor injuries to other parts of his body. In another instance the helmet stayed intact and the motorcycle operator suffered a head fracture, but not one that resulted in major injury. Finally, a third person was such an impressive case, we kept him in the hospital overnight for observation because we couldn't believe there was nothing wrong with him. I would like to present his helmet here as evidence of the enormous energy involved as this person struck the ground at 60 mph.

The picture is often even more dramatic for the belted versus unbelted operators or passengers in automobiles and trucks. The following cases were seen at Bay State Medical Center. A teenage girl, unbelted, sitting in the middle of the back seat died in a low speed accident when her head was impaled on the gear shift located between the front seats. No one else in the car, all belted, was even bruised. A young father in a pick-up truck, unbelted, collided in a low speed accident with a passenger car. He was thrown out of the truck and died from an isolated head injury. The occupants of the passenger car, all belted, none injured, were amazed when they learned hours later that the other driver had been seriously injured.

Most of the trauma we see at Bay State Medical Center is motor-vehicle related, and, unfortunately, most of the patients we treat were not wearing seatbelts. A young man, unbelted, crushed his head in a roll-over, but didn't die. A young female, unbelted, stopped at a light and was struck on the side by a car running a stop light. She was thrown out of the opposite window; her only injury was a broken neck. She lived. Another young male, unbelted, windshield smashed, went out through the jagged windshield leaving his wire-rimmed glasses on the edge. I don't need to describe his facial injuries, or how he looks now.

The dramatic differences in injury between belted and unbelted crash victims also results, not surprisingly, in significant differences in the cost of care. Recent studies in North Carolina, Tennessee, and the Chicago area demonstrate that there are significant differences in hospital costs for belted versus unbelted victims of motor-vehicle crashes. A study conducted at the University of North Carolina concludes that seat belts could have saved 42 lives and $4.5 million dollars in hospital costs during a recent 14 month period in North Carolina (6). Nationwide, the National Highway Traffic and Safety Administration has concluded that if all front seat occupants of passenger vehicles had worn seat belts in 1987 and all motorcycle operators had worn helmets, 12,000 lives would have been saved, 437,000 injuries prevented, and $7 billion in costs saved.

A study of motor-vehicle crash victims treated during one six-month period in 1987 at the University of Tennessee Medical Center found that unbelted patients were younger and more often male than belted patients. They also were more often hospitalized for their injuries -- 59 percent of the unbelted patients versus 26 percent of those who wore their belts. Unbelted patients had more serious injuries than belted patients, and had significantly higher hospital costs -- almost 200 percent higher -- and these costs were much more likely to be unreimbursed (7).

The final point I would now like to discuss more fully concerns the impact that these unnecessary costs have on our beleaguered health care system. First, I want to state that the decision to wear or not to wear a seatbelt or motorcycle helmet is not a private decision. Many of the direct medical costs of these victims of motor-vehicle crashes are paid for with public tax dollars. A recent study of motorcycle trauma at Harborview Medical Center in Seattle found that fully 63.4 percent of acute and rehabilitative care was paid for by public funds, primarily Medicaid (8). This corroborates other studies (5, 9, 10). The decision not to wear a seatbelt or helmet at least doubles the cost for health care, should an injury occur. This puts pressure on the financing system, and ultimately on the taxpayer.

Secondly, much of the cost that is incurred by uninsured motor-vehicle crash victims who are not eligible for Medicaid is unreimbursed. Hospitals, and other health care providers, have to absorb these losses, or they must attempt to pass them on to privately paying patients through higher charges. The latter process has led to steeply rising insurance premiums, both for employees and employers, creating the serious discontent that now threatens the whole health benefit structure. Even for motor-vehicle crash victims with insurance coverage, unhelmeted and unbelted patients, who incur twice the cost for their care, also help to drive up premium costs for everyone.

Increasingly, hospitals find they cannot shift unreimbursed costs onto other payors due to other influences, such as Medicare's DRG payment system, that are squeezing their operating margins. These hospitals must either absorb their mounting losses, or close down their trauma centers or emergency departments, in order to survive as community institutions.

Most Level I trauma centers are also regional referral centers for trauma, and most treat a significant number of motor-vehicle crash victims from surrounding states. Obtaining Medicaid payment across state boundaries is often frustrating and unsuccessful. Pursuing liability insurers, or disch[illegible] patients themselves, for payment is equally problematic.

These factors have resulted in nearly twenty-five designated trauma centers closing their doors to the seriously injured in the past few years because they could no longer sustain increasing losses. The typical designated trauma center loses, on average, between $1 million and $3 million in actual costs per year (1). My own hospital, which operates a designated trauma center, that has been verified as a Level I center by the American College of Surgeons, documented a significant loss during 1988 in actual costs. This is particularly alarming since Bay State Medical Center is not located in a major urban center and enjoys a higher ratio of privately insured patients in general.

Faced with losses of this magnitude, hospital administrators are increasingly forced to choose between providing the life-saving services of a trauma center, or attempting to meet other important community needs such as care for those with AIDS, or drug addiction, or women with high risk pregnancies.

When a trauma center closes its doors it creates a ripple effect in the surrounding community, placing increased pressure on any remaining trauma centers and emergency departments. These facilities are then forced to triage emergency patients in a fashion that increases the risk of death and permanent disability.

Clearly, there are many approaches that would help relieve the tremendous stress our trauma centers and emergency departments are experiencing. But mandating seatbelt and motorcycle helmet use is probably the single most cost-effective step that can be taken. It has been well-documented that laws requiring motorcycle helmet use have a dramatic impact on actual use with consequent savings in lives and dollars (5, 11). Less dramatic, but improved use results with enactment of seatbelt laws, particularly when laws provide for primary enforcement and are accompanied by strong public awareness efforts (7).

This combination of carrot and stick -- of providing incentives to states to mandate use, but providing additional funding for enforcement and public awareness efforts to enhance actual use rates -- is an especially strong feature of S. 1007.

The American Trauma Society and The American College of Surgeons commend you Mr. Chairman for your strong support of S. 1007, and we commend Senator Chafee for his personal commitment to reducing death, disability, and the escalating health care costs that threaten the public's access to definitive care.

Thank you for the opportunity to appear before you today. I would be pleased to answer any questions you may have.

References

1. Champion, Howard R., MD, Mabee, Marcia, Ph.D. *An American Crisis in Trauma Care Reimbursement*, in press.

2. U.S. Congress: 100th, Second Session. Congressional Research Service. *Health Insurance and the Uninsured: Background Data and Analysis*, GPO: October, 1988.

3. Jessor, R. "Risky Driving and Adolescent Problem Behavior: An Extension of Problem-Behavior Theory", *Alcohol, Drugs, and Driving*, Vol. 3 (July-Dec.), 1987.

4. Maron, D.J.; Telch, M.J.; Killen, J.D.; et al. "Correlates of seatbelt use by Adolescents: Implications for Health Promotion", *Preventive Medicine*, Vol. 15, 1986.

5. McSwain, Norman, E., Jr., MD and Belles, Anita, MS. "Motorcycle Helmets: Medical Costs and the Law," presented at the American Association of the Surgery of Trauma, October, 1989.

6. Robert Rutledge, MD, "The Cost of Not Wearing Seat Belts: A Comparison of Outcome in 1,472 Patients," Accepted for Presentation at the Annual Meeting of the Eastern Association for the Surgery of Trauma, January, 1990.

7. Reath, David, B.; et al. "Injury and Cost Comparison of Restrained and Unrestrained Motor-Vehicle Crash Victims", *Journal of Trauma*, Vol 29, 1989.

8. Rivara, Frederick, P.; et al. "The Public Cost of Motorcycle Trauma", *Journal of the American Medical Association*, Vol. 260, July, 1988.

9. Bray, Timothy, MD, et al. "Cost of Orthopedic Injuries Sustained in Motorcycle Accidents," *Journal of the American Medical Association*, Vol. 254, November, 1985.

10. Bernard R. Bach, Jr., MD; and Edwin T. Wyman, Jr., MD. "Financial Charges of Hospitalized Motorcyclists at the Massachusetts General Hospital," *Journal of Trauma,* Vol. 26, 1986.

11. U.S. Department of Transportation, National Highway Traffic Safety Administration. *The Effect of Motorcycle Helmet Usage on Head Injuries, and the Effect of Usage Laws on Helmet Wearing Rates,* DOT HS 805 851, March, 1981.

Statement before the Subcommittee on Water Resources, Transportation, and Infrastructure, U.S. Senate Committee on Environment and Public Works

Brian O'Neill, President

October 17, 1989

INSURANCE
INSTITUTE
FOR
HIGHWAY
SAFETY

1005 N. GLEBE ROAD, ARLINGTON, VA 22201 (703) 247-1500

The Insurance Institute for Highway Safety is a nonprofit research and communications organization, supported by the nation's property and casualty insurers, that identifies and develops ways to reduce motor vehicle crash losses. I'm the Institute's president and, at this subcommittee's request, I'm submitting for the record information from the Institute about motorcycle helmets and helmet use laws as well as safety belts and belt use laws.

Both lap/shoulder belts and helmets provide very effective crash protection. Belts keep motor vehicle occupants from being ejected or from slamming into the hard interior of a vehicle in a crash. And motorcyclists, who lack the protection of an enclosed vehicle, need helmets to keep their heads from striking the pavement or other hard surface in a crash. According to the most current estimates of effectiveness, safety belts reduce the likelihood of occupant death or serious injury in a crash by about 45 percent. Helmets reduce the chance of motorcyclist death or serious injury by about one third.

When they're used, both helmets and belts save lives. Both reduce injuries. But they're not used often enough unless they're mandated. This is why it's essential for states to enact effective laws mandating safety belt use by occupants and helmet use by motorcyclists.

Safety Belts: What's Needed to Increase Use Rates?

During the late 1970s and early '80s, before any safety belt laws had been enacted in the United States, voluntary belt use generally was below 20 percent. In other western nations, voluntary belt use rates were also low before safety belt laws were enacted,[1] although not always as low as in the United States.

The first such law in the world took effect in 1970 in the state of Victoria, Australia, and it was an immediate success. Belt use rates increased substantially and, in the first year, the law resulted in 21 percent fewer motor vehicle occupant deaths in metropolitan areas, 10 percent fewer in rural areas.

Soon after Victoria, other Australian states plus New Zealand, many European countries, and Canadian provinces followed suit and enacted belt laws. Insurance Institute for Highway Safety researchers studied the effects in Ontario, Canada, finding driver belt use at 23 percent in December 1975, just before the safety belt law took effect, and 75 percent just after. But, six months later, the use rate in Ontario had slipped to about 50 percent and remained there. The same pattern of initially high belt use followed by a decline and leveling off was found in Quebec and British Columbia, where safety belt laws also are in effect. Meanwhile, the rates in Canadian provinces without belt use laws remained virtually unchanged at 10 to 15 percent.

---

[1] Before a safety belt law was enacted in Victoria, Australia, for example, 15 percent of all motorists buckled up voluntarily. In Denmark, the voluntary use rate was 19 percent before a safety belt law was enacted; in Canada, 24 percent; in New Zealand, 33 percent; and in England, 40 percent.

The United States is a relative latecomer to safety belt use laws. New York was the first to enact such a law, followed quickly by New Jersey, in the mid 1980s. Now 34 states and the District of Columbia have belt laws on the books.[2] And we're seeing the same patterns of compliance as during the early years of the Canadian laws -- initially high use rates followed by a leveling off at or below 50 percent.

Why isn't compliance with safety belt laws higher? In part because so many U.S. laws provide only for so-called "secondary" enforcement, which limits police authority to stop and ticket motorists for failure to buckle up. Of the safety belt laws now in effect in the United States, only eight provide for "primary" enforcement, which means police may issue tickets solely for failing to use belts. In the other 26 states and the District of Columbia, where "secondary" enforcement is in effect, police have to stop motorists for other violations before they can enforce the safety belt law.[3] It's no surprise that use rates are generally higher -- and death and injury reductions greater -- in the states with "primary" enforcement.

So some safety belt laws are clearly better than others. But even putting strong laws on the books isn't enough, by itself, to ensure compliance. Publicity and enforcement of safety belt laws are required, too, in order to push use rates much higher than 50 percent. In Elmira, New York, for example, belt use was only 14 percent before the state's safety belt law took effect. It rose to 49 percent after the law went on the books. Then Institute researchers began to work with local officials in 1985 and '86 on a publicity and enforcement program that involved notices on television, radio, and in newspapers that police were beginning to enforce the belt law vigorously. When police actually started writing tickets, belt use increased to 63 percent, then 77 percent, and peaked at 80 percent, the highest in the nation at that time. At the conclusion of Elmira's program, use rates declined somewhat, but they remained higher than in other, comparable cities during the following year.

---

[2] Only Alabama, Alaska, Arizona, Arkansas, Delaware, Kentucky, Maine, Massachusetts, Mississippi, Nebraska, New Hampshire, Oregon, Rhode Island, South Dakota, Vermont, and West Virginia don't have safety belt laws.

[3] The following states are "primary" enforcement states where police may stop and ticket motorists solely for failing to use their safety belts: Connecticut, Hawaii, Iowa, New Mexico, New York, North Carolina, North Dakota, and Texas. The following states are "secondary" enforcement states where police must stop motorists for other violations before they can enforce the safety belt law: California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Kansas, Louisiana, Maryland, Michigan, Minnesota, Missouri, Montana, Nevada, New Jersey, Ohio, Oklahoma, Pennsylvania, South Carolina, Tennessee, Utah, Virginia, Washington, Wisconsin, and Wyoming. The District of Columbia is also a "secondary" enforcement jurisdiction.

Similar cases of publicity and enforcement producing high belt use rates have been reported in Canada. British Columbia, for example, has been among the most active in providing sustained education about the safety belt law together with intermittent, well-publicized enforcement, according to an official of Transport Canada. And the results are impressive -- belt use increased every year between 1981 and 1987, reaching a high of 80 percent. In Quebec, where use rates were disappointing during the early years of a safety belt law, officials launched the most extensive education and enforcement campaign yet seen in Canada. As a result, the rates rose from 53 percent in 1985 to 86 percent in 1987. This is an especially impressive achievement because Quebec is the second largest province and includes a quarter of Canada's population.

With publicity and enforcement, belt use rates of 80 percent or more can be achieved across the United States. This doesn't mean we need a police state with motorists getting tickets right and left. What we need are strong safety belt use laws on the books in all 50 states. This means enacting such laws in the 16 states without them. It means changing the laws in 26 more states and the District of Columbia where only secondary enforcement is allowed. In addition, we need widespread publicity and moderate enforcement of safety belt laws in order to achieve high rates of compliance.

Motorcycle Helmets: What's Needed to Increase Use Rates?

Helmet laws were enacted in the United States before safety belt laws. By 1973, in fact, all except three states mandated that all cyclists wear helmets. However, Illinois repealed its law in 1970 and, by 1980, 28 more states had abandoned or substantially weakened theirs. Now only 22 states and the District of Columbia have helmet use laws that apply to all riders.[4] Twenty-four more states have laws that require helmet use by riders younger than specified ages, usually 18.[5] But these laws have problems that are similar to those of safety belt use laws with secondary enforcement -- they're hard to enforce. Hence, compliance rates are less than 50 percent. And there's no evidence whatsoever to indicate that these limited helmet use laws save lives. In the 18 states that currently mandate helmet wearing only for those 18 years and younger, 12 percent of all motorcyclists killed in crashes are from this age group. The same percentage holds for the under-18 group in states without any helmet laws at all.

---

[4] Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Massachusetts, Michigan, Mississippi, Missouri, Nebraska, Nevada, New Jersey, New York, North Carolina, Oregon, Pennsylvania, Tennessee, Texas, Vermont, Virginia, West Virginia, plus the District of Columbia have helmet laws that apply to all riders.

[5] Motorcycle helmet use laws in Alaska, Arizona, Connecticut (effective 1990), Hawaii, Idaho, Indiana, Kansas, Maryland, Minnesota, Montana, New Hampshire, New Mexico, North Dakota, Ohio, Oklahoma, South Dakota, Utah, Washington, and Wisconsin apply only to riders under 18 years old. Maine's law applies only to riders under 15 years old. California's applies only to those under 15-1/2. Delaware's and Wyoming's apply only to those under 19. And South Carolina's applies only to those under 21. Rhode Island's law applies to passengers only. Colorado, Illinois, and Iowa don't have helmet use laws.

On the other hand, compliance with helmet use laws that apply to all riders is near 100 percent. And the death- and injury-reducing benefits of these laws are impressive. Texas A&M researchers estimate that the universal helmet law in effect in that state from 1968 to 1977 saved 650 lives. So it's good news that, just last month, Texas reinstated a helmet law that applies to all riders. It's too early to count the number of lives saved because of this reinstatement, of course, but we at the Insurance Institute for Highway Safety have new research indicating that helmet use rates more than doubled in Texas in the month after reinstatement. Driver helmet use increased from 42 percent in August to 91 percent in September. Passenger helmet use increased from 32 to 76 percent during the same time period. These huge increases occurred even though the Texas Department of Public Safety announced that most offenders would get only warnings during the first months of the law when the survey was being conducted.

A similar pattern has been observed in Louisiana, where a universal helmet law was reinstated in 1982 following six years of a law that applied only to riders younger than 18. The proportion of cyclists using helmets immediately increased from 50 to 96 percent, and the cyclist death rate decreased from 38 to 29 per 1,000 crashes. The benefits of helmet laws thus return as soon as the laws are reinstated. Such laws ought to be in effect in every U.S. jurisdiction.

Federal Sanctions and Incentives

One way to get state legislators to enact helmet and safety belt use laws is to threaten to withhold federal highway funds to states that fail to do so. In the case of helmet laws, such sanctions were tried in 1973 and, by 1975, legislators in every state except California, Illinois, and Utah had enacted helmet laws. But when the Department of Transportation moved to impose the sanctions on these three holdout states so that they'd actually lose their federal funds, Congress withdrew the authority to impose the sanctions. The federal effort thus collapsed, and many states subsequently abandoned or substantially weakened their motorcycle helmet use laws.

During the more recent push for 21-year-old alcohol purchasing ages in every state, though, the threat of federal sanctions worked. All 50 states raised their drinking ages. What history tells us, then, is that federal sanctions are problematic. Sometimes they work. Other times they don't.

Federal incentives -- the "carrot" as opposed to the "stick" of sanctions -- may be problematic, too. For example, Congressional action in 1973 allowed the U.S. Department of Transportation to increase federal highway safety grants to states by up to 25 percent if a safety belt use law were passed. But the result wasn't heartening. Not a single state joined Puerto Rico in passing such a law.

Another example involves the Alcohol Traffic Safety Incentive Grant Program, enacted by Congress in 1982 to encourage prompt license suspension and other laws by offering supplemental grants. But only 11 states adopted administrative license suspension laws as a result of this federal action. As of now, only 28 jurisdictions have such laws on their books.

Conclusion

Laws requiring helmet use, safety belt use, or measures aimed at alcohol-impaired driving are essentially up to the states. This doesn't mean there shouldn't be federal involvement in such programs. Quite the contrary. Without federal involvement, some important state safety laws wouldn't be on the books.

They ought to be on the books for reasons of both public safety and economics. When people are injured because they weren't using a safety belt or a motorcycle helmet, they rarely pay their own medical care and rehabilitation bills. Rather, insurance companies and the government pay. This in turn leads to higher insurance and other costs. So using helmets and belts isn't simply a freedom-of-choice issue. It's an issue that affects virtually everyone.

Whatever action the federal government can take to encourage states into adopting safety belt and motorcycle helmet use laws should be taken as soon as possible. Moreover, this federal action should be aimed at enacting strong state laws. By this I mean laws requiring all motorcyclists to use helmets and empowering police to stop and ticket motor vehicle occupants solely for failing to buckle up. Unless state laws are strong, they simply don't have much effect on highway deaths and injuries.

TESTIMONY BEFORE THE UNITED STATES SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE CONCERNING SENATE BILL S. 1007 THE NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989

Presented by

David C. Viano, PhD

representing

The Association for the Advancement
of Automotive Medicine
&
The National Head Injury Foundation

October 17, 1989
Room 406 Dirksen Senate Office Building

Good morning, Mr. Chairman and other members of the Subcommittee. My name is David Viano. I am Principal Research Scientist in the Biomedical Science Department of the General Motors Research Laboratories, but I appear before you today in my capacity as Treasurer of the National Head Injury Foundation (NHIF) and President of the Association for the Advancement of Automotive Medicine (AAAM).

For reasons that I will explain later in my testimony, both the NHIF and the AAAM strongly support the prompt enactment of the bill that is the subject of today's hearing: S. 1007, the "National Highway Fatality and Injury Reduction Act of 1989." We greatly appreciate the Subcommittee's interest in this important matter and want to thank you for the opportunity to present our views.

Mr. Chairman, I should note at the outset that both the NHIF and the AAAM have been active for many years in studying the causes of, and ways to reduce, injuries sustained in motor vehicle crashes. As early as 1972 AAAM had adopted a tenet to "strongly support the National Highway Traffic Safety Administration (NHTSA) in the development and promulgation of a Highway Safety Program Standard which (would) require that states enact legislation mandating the use of occupant restraint systems" -- and although this is not the method we had first envisioned, perhaps this bill would encourage the states to pass such laws on their own.

Three years later AAAM also adopted a resolution to support NHTSA's plan to include a belt-use program as part of the Highway Standards for individual states thereby encouraging the passage of belt-use laws in many states. And as you know, this legislation also encourages states to pass motorcycle helmet laws. Once again, AAAM in 1975, had urged the Secretary of Transportation to develop a national standard to require the use of this safety technology as well. The NHIF has long held the position that safety belt and helmet use is a principal means of preventing the devastating consequences of traumatic brain injury and has supported state efforts to enact safety belt and helmet use laws.

The membership of the NHIF and AAAM consisting of physicians, scientists, health care professionals, injured victims and family members has had first hand experience in observing the frequently unnecessary consequences of such injuries. We are active in working with lawmakers at the Federal, State, and local levels in looking for ways to reduce the frequency and severity of automotive and motorcycle crash injuries. I personally have been involved professionally in this field for 17 years and during that time have written and published over 100 articles on matters that are pertinent to today's hearing. Thus, we bring to your deliberations a wealth of experience and expertise, which we want to share with you and which we hope you will find helpful in your consideration of the measure now before you.

Mr. Chairman, opinion poll after opinion poll indicates that the American people believe that illegal drugs are the number one problem facing our country. Maybe they are. Certainly, the cost of the drug tragedy, borne by our society in so many different ways, is staggering. But we must recognize that we face another problem of daunting and major proportions: the widespread occurrence of injuries, fatalities and disabilities as a result of motor vehicle crashes on the Nation's roads and highways. As with the problems of illegal drugs, injury in America is a public health issue that can and must be addressed.

In my testimony today I intend to review the size and scope of this critical problem. I also intend to demonstrate that, through the mandatory use of automobile safety belts and motorcycle helmets, the number of injuries and fatalities that occur in the United States can and would be substantially reduced.

In particular, I plan to show that enactment of S. 1007, which would provide the States with financial incentives to enact mandatory motorcycle helmet and automobile safety belt laws and to encourage use, would be a step in the right direction -- a step that would save lives, prevent or lessen motor vehicle injuries, reduce the burden on our national medical resources, eliminate the suffering of numerous injury victims and their families, and save the taxpayers' money.

By way of background, Mr. Chairman, you should be aware that in 1988 there were 21 million major automobile crashes in the United States, in which 5.4 million injuries and 48,700 deaths occurred. These injuries and fatalities cost the Nation $48.7 billion (1)! And these figures, as appalling as they are, do not -- indeed cannot -- begin to reflect or convey the immensity of the human suffering involved.

You may have seen recently a widely-read syndicated newspaper column, entitled "Weekly Highway Death Toll Equals Three 747 Jet Crashes -- Killing All on Board." The point of this column was, as you might guess, that we would never tolerate the loss of three commercial aircraft and their passengers each week and would take whatever steps proved to be necessary to avoid such losses. Indeed, that is what we have done.

Interestingly, the commercial passenger aviation industry has an excellent safety record and so has the motoring public in America. You may be surprised to know that from a statistical standpoint, it is equally safe to fly from Washington to Detroit as it is to get in your own automobile and driver the same distance (2). This attests to the fact that we have a highway system that is one of the safest in the world. In fact, from the 1930's to the present, there has been a continuous improvement in driving safety on our roadways. The fatality rate then was 15.6 per 100,000,000 vehicle miles of travel and is now approaching the 1990's at a rate of 2.4 per 100,000,000 miles. These figures are frequently quoted but it is difficult, I think, to appreciate what 100,000,000 miles are.

Based on the distance between San Francisco and New York City, which is 2,930 miles, the 2.4 rate means that you have to take 14,220 trips across the U.S., on the average, to experience one fatality. Thus, it is extremely safe to drive on our highways -- yet this fact is illusive since crash injury is the leading cause of death and disability to young people in the United States (3). Of course, the risk of a crash varies greatly depending on the age and habits of the driver, but then most crashes are not caused by vehicle design flaws, roadway problems or acts of nature. Instead, they can be directly related to driver behavior. This legislation will help millions of Americans adopt new behavior that can be life-saving. And just maybe S. 1007, in changing peoples health habits, would have a ripple effect into other injury prevention behavior.

One must wonder why the public has apparently acquiesced in, or at least become resigned to, the injury on the Nation's roads. Perhaps it is because severe automobile crashes, even those in which serious injuries, death or permanent disability occur, are not "news" in the way that the dramatic crash of a commercial airline is. They take place singly, in big cities and small towns, in urban and rural areas, and in all regions of the country.

In fact, injuries sustained in serious automobile crashes have become so common, that many people do not view them as exceptional or remarkable at all. In my view, this is most unfortunate, particularly in view of the tens of thousands of victims who survive with permanent disability -- something that is extremely rare in aviation accidents but can occur in severe motor vehicle crashes. Especially tragic are those without resources to access treatment and rehabilitation, and their families frequently become lifelong caretakers without relief or recognition for help and financial assistance.

Before proceeding to a discussion of some of the key evidence in support of enactment of S.1007, I would like to touch briefly on two arguments made by opponents of this and similar proposals.

ARGUMENTS AGAINST USE LAWS ARE UNREASONABLE

First, it is sometimes argued that the government -- whether Federal, State, or local -- has no business mandating the use of motorcycle helmets or automobile safety belts. Such requirements, it is suggested, somehow infringe on an individual's "right" to choose not to protect himself or herself.

I do not find such arguments persuasive. Operating a motor vehicle on public streets and highways is a privilege conferred by State governments. Those governments have a responsibility -- no, a duty -- to condition that privilege on the observation of reasonable rules and regulations designed to increase public safety and reduce the risk of a crash and injury.

Rules that require drivers to stop at red lights, to observe posted speed limits, to yield the right of way, and to refrain from driving when under the influence of alcohol are all excellent examples of ways in which State governments have restricted individual discretion in many areas including the operation of a motor vehicle but have done so to promote individual safety. Requiring the use of safety belts and helmets is no more unreasonable an infringement of an individual's "rights" than these other long-standing and well-accepted limitations.

Second, some have said that it is an inappropriate violation of principles of federalism for the Federal Government to require the States to enact mandatory use laws. In response, we would only note that, if enacted, S. 1007 would not require a State to do anything. It would merely condition the receipt of highway and/or grant funds on the enactment of a mandatory use law. A State without such a law on its books would not be required to enact one. In that connection, you should be aware -- as you probably are, already -- that 34 States and the District of Columbia have acted to enhance the safety of their citizens through enactment of mandatory use laws.

It is useful to note that the approach of conditioning receipt of highway funds has been successful in bringing about a uniform 21 drinking age which has resulted in significant reductions in alcohol related crash fatalities for those under that age.

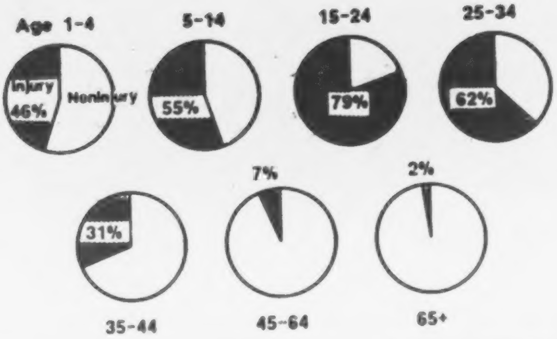
That having been said, I would now like to review some of the data and other considerations that argue in favor of S. 1007.

INJURIES AS A RISK FACTOR FOR CHILDREN AND OTHERS

It is unfortunate, but true, that injuries are the leading cause of death and disability among children and young adults. In fact, injuries kill more Americans between the ages of one and 34 than all diseases combined and are the leading cause of death for all persons through age 44 (3). Figure one breaks down the causes of death in the United States in 1980 by age group. I particularly wish to direct your attention to the especially high percentages of deaths in the 15-24 and 25-34 age groups, 79 percent and 62 percent, respectively, that are attributable to injury.

Of the deaths that occur because of injuries, the majority -- 51 percent -- are motor vehicle-related. Falls (13 percent) and drowning (seven percent) trail far behind. Figure two shows the relative incidence of causes of death in the United States for all persons and, within the "accidents" category, indicates the frequency of various kinds of fatal mishaps. You will note that motor vehicle collisions comprise the fourth leading cause of all deaths annually in this country.

A discussion of deaths that result because of injury does not begin to tell the entire story, however. For, in addition to the large number of accidental deaths that occur each year, injury greatly surpasses all major disease groups as the cause of years of worklife lost. For example, as illustrated by figure three, the number of years of productive worklife lost as a result of injury deaths now exceeds three million per year, compared to



Age	Injuries	Congenital Anomalies	Cancer	Pneumonia/ Influenza	Heart Disease	Liver Disease	Stroke	Other
1-4	46%	13%	7%	3%	4%	-	-	27%
5-14	55%	5%	14%	-	3%	-	-	23%
15-24	79%	-	5%	-	3%	-	-	13%
25-34	62%	-	10%	-	6%	3%	-	19%
35-44	31%	-	21%	-	20%	6%	4%	18%
45-64	7%	-	32%	-	36%	4%	5%	16%
65 +	2%	-	19%	3%	48%	-	10%	18%

Figure 1: Percentages of deaths from injury and other causes in the United States in 1980 by age. (redrawn from Injury in America (3)).

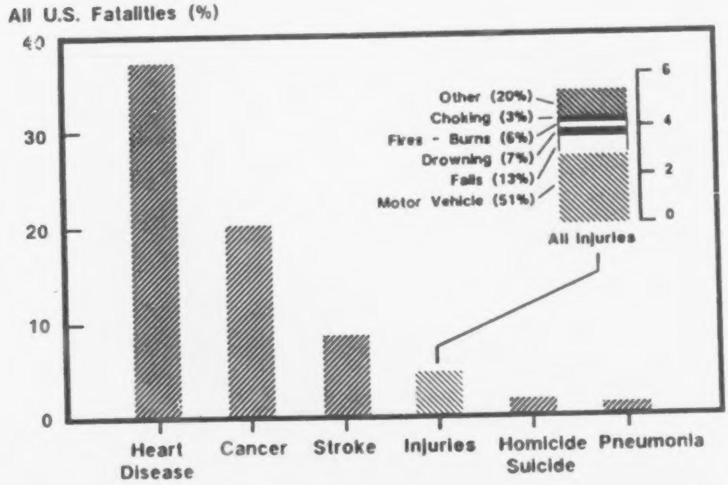


Figure 2: Most frequent causes of fatalities in the United States in 1982 (redrawn from (4) using data in Injury in America (3)).

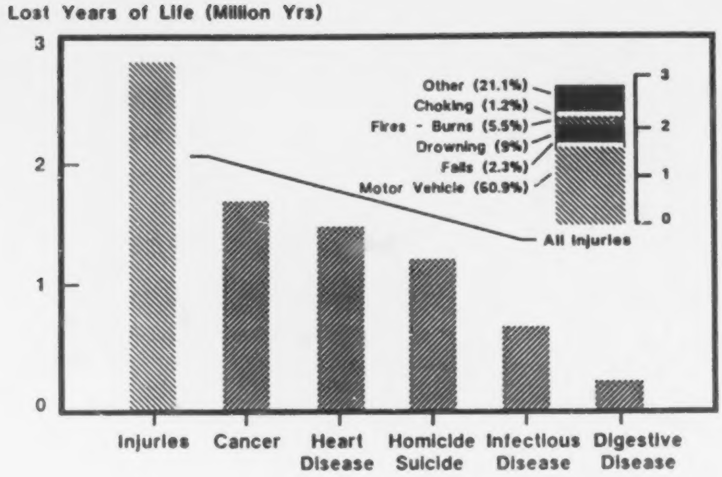


Figure 3: Most frequent causes of lost years of worklife in the United States in 1982 (redrawn from (4) using data in Injury in America (3)).

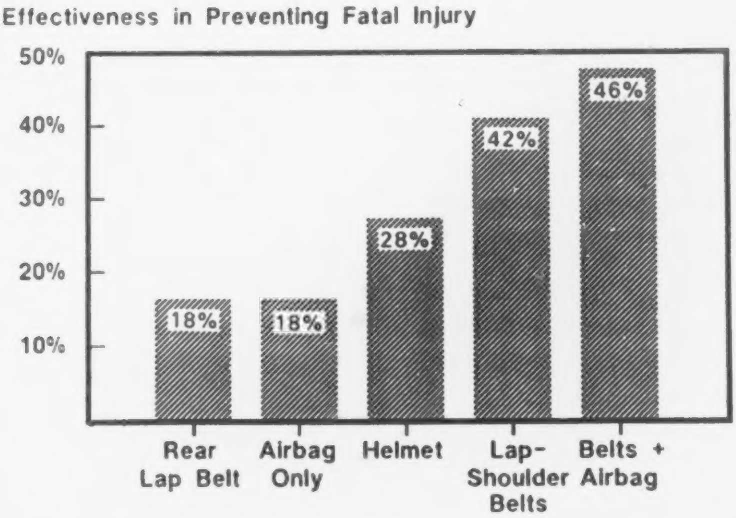


Figure 4: Effectiveness of safety devices in preventing fatal injury in severe motor vehicle crashes (based on data in (6-10)).

less than two million for cancer and heart disease, and less than one million for infectious diseases (4). The large number of workyears lost due to injury is directly related to the high incidence of fatal injuries among young persons.

EFFECTIVENESS OF AUTOMOBILE SAFETY BELTS AND MOTORCYCLE HELMETS

As we have seen, a very large number of persons are killed or injured in motor vehicle crashes in the United States each year. Some fatal crashes are so severe that wearing a helmet or safety belt, or providing the very best emergency care would not save the lives involved. For example, it is unlikely that a motorcyclist involved in a head-on collision at 55 miles per hour with an automobile is likely to survive, even if he or she were wearing a helmet. The same holds true even for belted occupants of particularly severe automobile crashes (5).

There is, however, a proven, effective, and reasonably inexpensive way to increase the likelihood that persons involved in serious automobile and motorcycle crashes survive without such a high incidence of severe injury and death. This is, of course, through the use of automobile safety belts and motorcycle helmets.

Figure four demonstrates the effectiveness of safety belts and helmets in preventing fatal injuries (6,7). Lap-shoulder belt use is 42% effective in preventing fatal crash injuries (i.e., forty-two unbelted victims out of 100, would have avoided fatal injury by simply using the lap-shoulder belts provided in their vehicle). Helmet use is 28% effective in preventing fatal injury in motorcycle crashes. It should also be noted that the effectiveness of rear lap belts and airbags, by themselves, is considerably less than the effectiveness of combination lap-shoulder belts (8,9). However, the combination lap-shoulder belts and air bag is approximately ten percent more effective than lap-shoulder belts used by themselves and is part of a package of safety technologies for occupant protection (10).

INJURY PREVENTION WITH SAFETY BELT AND HELMET USE

Assuming that belts and helmets had been in use in each collision in which a fatality took place (using 1987 data from NHTSA's Fatal Accident Reporting System), thousands of lives could have been saved and many more serious and disabling injuries eliminated. With respect to automobile crashes, please note that 84 percent of the driver and right front passenger deaths -- a total of 24,756 -- occurred in crashes in which safety belts were not employed. Assuming a 42 percent effectiveness rate for lap-shoulder belts in the prevention of fatal injuries, 10,398 lives could have been saved had such belts been in use in all crashes in which fatalities took place (Table 1).

Table 1

Estimate of Lives Saved with Safety Belt and Helmet Use

	1987 Fatalities Without Use		Lives Saved		
	In states with use laws	In states without use laws	All states with laws	70% use	100% use
Helmets	509(64.5%)	1,907 (20.4%)	436	473	676
Belts	15,587(19.8%)	9,169 (9.4%)	2,059	7,278	10,398
			2,495	7,751	11,074
All occupants using belts or helmets					11,957

Table 2

Safety Belt and Helmet Use in Fatal Accidents and Normal Driving

	States With Use Laws		States Without Use Laws	
	Fatalities	%	Fatalities	%
Helmets				
Used	926	64.5	491	20.5
Not Used	446	31.1	1,534	64.0
Unknown	63	4.4	373	15.6
Observed Use		99.6%		49.7%
Belts				
Used	3,842	19.8	948	9.4
Not Used	12,813	65.9	8,184	80.9
Unknown	2,774	14.3	985	9.7
Observed Use		49.8%		29.7%

Similarly, the data show that the number of deaths resulting from motorcycle crashes can be substantially reduced through the use of helmets. I estimate, for example, that in 1987, 676 lives -- the equivalent of two full jumbo jets -- could have been saved if all motorcyclists involved in fatal crashes had been wearing helmets.

Thus, taken together, had lap-shoulder belts and motorcycle helmets been employed in all collisions in which people were killed in 1987, 11,074 lives would have been saved -- the equivalent of nearly forty full jumbo jets. In my view, this figure argues strongly in favor of governmental action to encourage the use of safety belts and helmets.

I note that safety belts were in use in only 16 percent of the fatal automobile crashes that took place in 1987 (i.e., 84 percent of the persons killed were not using safety belts (11)). If S. 1007 were enacted -- and the 16 States that have not put mandatory use laws on their statute books did so -- I estimate that belt usage would increase at least to a level occurring in states with belt use laws. This would result in more than a doubling of belt use in severe crashes -- there was 19.8% use in fatal crashes in states with laws versus 9.4% in states with no such law (Table 2). By this action alone, 2,059 lives could be saved in those sixteen states. Combined with the benefits from helmet use, 2,495 lives would have been saved last year!

AVAILABILITY OF SAFETY BELTS AND USE

Importantly, automobile safety belts are a safety device that is available in all vehicles now, even as airbags are being phased in. Indeed, since 1966 the Federal Government has required that automobiles sold in the United States come with such belts as standard equipment. So the principal problem does not lie in making this lifesaving technology available but, rather, in getting drivers and passengers to develop the habit of taking advantage of it.

I believe the education and enforcement aspects of this laws would increase safety belt use dramatically and would cause use to exceed 70 percent well before the end of the 1990's. Of course, as highlighted in figure five, belt usage would continue to increase, even if S. 1007 were not enacted, because of the State mandatory use laws that are already in effect. The increase would simply not be as dramatic, and the number of lives saved and injuries prevented would not be nearly as great.

Mr. Chairman, at this point I need to stress an important observation concerning the use of airbags, to which I alluded earlier. Airbags are an effective lifesaving safety device in automobiles, particularly in certain head-on collisions, and when used in combination with lap and shoulder safety belts.

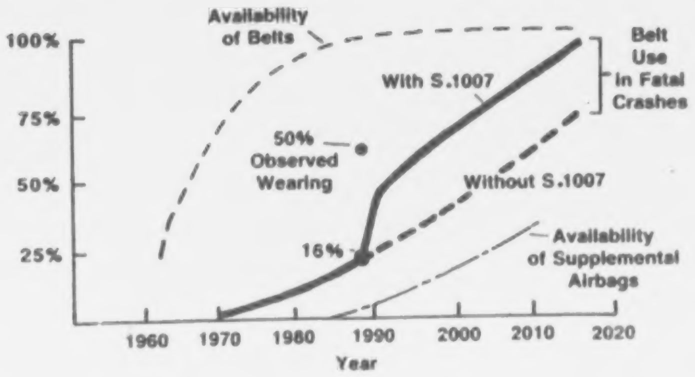


Figure 5: Projection of the increased use of safety belts in fatal crashes with the enactment of S. 1007.

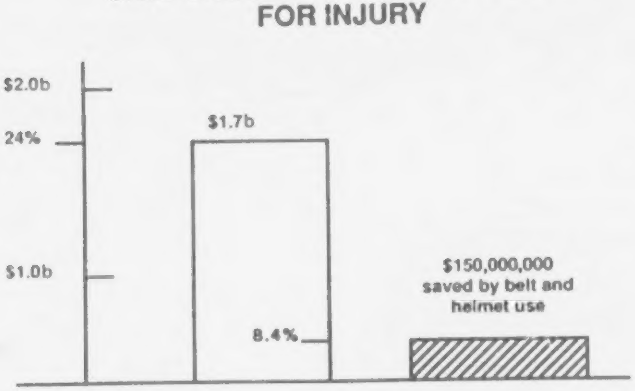

UNSPONSORED HOSPITAL COSTS FOR INJURY

Figure 6: Potential cost savings in unsponsored hospital bills for traumatically injured patients (based on data in (12)).

I am concerned, however, that, at least in some circles, air bags may be viewed as a "cure-all" that can or will take the place -- and be more effective than -- safety belts in preventing death and serious injury in automobile collisions. This, unfortunately, is a misconception. In that regard, switching from safety belt use only to airbag use only would actually increase the risk of fatalities in serious automobile crashes by 41 percent (i.e., 58% risk with lap and shoulder belt use versus 82% risk with airbag use only (9,10)). Consequently, it is absolutely critical that, as airbags become generally and more widely available in the future, drivers and passengers be encouraged to wear lap and shoulder safety belts.

COST OF MOTOR VEHICLE-RELATED INJURIES TO SOCIETY

The cost of death, injury and disability sustained in motor vehicle crashes measured in terms of the physical and emotional toll taken on victims, their friends, and families, is immense and is not susceptible to any kind of meaningful measurement. But the economic costs imposed on society as a whole as a result of motor vehicle crashes are also great and can be measured -- or at least estimated with some fair degree of precision.

The NHTSA and the Centers for Disease Control (CDC) are now working together on the Public Health Problem of Injury. This is an important partnership which we support. They estimate that overall expenditures related to deaths and injuries occurring from all accidents to be about $158 billion per year, with the private sector bearing 72% and the public 28% (viz., taxpayer) of the costs (1). Of the public expenditures, over $20 billion is attributable to increased costs associated with Medicaid and Medicare ($8.9 billion) and with Social Security Disability, Supplemental Security Income and the Veterans Administration ($13 billion).

Thus, the economic costs associated with deaths and injuries total about $700 per year per person in the United States. Thirty-one percent of these costs are related to motor vehicle crash injuries and deaths. Looked at in a slightly different way, each year one person in fifty in the United States incurs medical and related bills in excess of $35,000 in connection with an injury.

Looking only at the portion of costs due to unpaid hospital bills gives us an idea of how injury related expenses can mount up. It is estimated that every year hospitals are burdened with unsponsored bills amounting to $7 billion dollars (12). Trauma care for the seriously injured represents an estimated $1.7 billion dollars or 24% of those unpaid bills, as shown in figure six. That amount represents 14% of the $12.4 billion in the costs for initial hospitalization for injury. This large fraction of unsponsored care is primarily because a high proportion of trauma care patients are uninsured and the cost of trauma care is two to four times higher than the cost of care for the average patient.

It is worth noting here that the Journal of the American Medical Association (JAMA) recently reported that 63.4% of all motorcycle crash-victims care was paid for by some form of public funds, with medicare payments accounting for slightly more than half of the charges (13). Less than 17% of hospital charges were paid directly by the injured motorcyclists. Similar findings have been reported for unbelted occupants injured in crashes, who are more seriously injured and incur greater medical expenses than belted victims (14). We estimate that 100% safety belt and helmet usage would save about $150,000,000 every year in hospital losses due to unsponsored costs.

I would like to add that as a volunteer organization, the NHIF has devoted much of its resources to address the lack of access and funding for medical care and rehabilitation for survivors of traumatic brain injury. Many families have suffered financial ruin as well as emotional devastation because of the occurrence of what they now know to be largely preventable injuries in motor vehicle crashes.

With respect to deaths and injuries suffered in motor vehicle crashes, it is possible to estimate the annual savings that would result if all automobile occupants wore safety belts and if all motorcycle riders wore helmets. In particular, if belts and helmets were worn 100 percent of the time, we can project that 11,957 lives would be saved. We are then able to project an overall savings in injury costs to the national economy of 8.4 percent (i.e., 11,957 lives saved divided by approximately 143,000 deaths from all injuries). Therefore, if the safety belt and motorcycle helmet use rate were 100 percent, the annual national savings would be about $13.2 billion.

COST EFFECTIVENESS OF SAFETY BELTS

After examining the overall costs to society of the failure of some to wear automobile safety belts and motorcycle helmets, it would be most instructive, I think, to look at the overall cost effectiveness of safety belts. That is, one might reasonably ask, whether, given the proven and demonstrated ability of safety belts to save substantial numbers of lives of those involved in automobile crashes, the cost of providing safety belts is reasonable and justifiable.

A study of risk-reducing Federal regulations published in Regulation in 1986 concluded, among other things, that passive restraints and safety belts were extremely cost effective, particularly when compared to other proposed Federal regulatory requirements for health and safety (15,16). In particular, the Regulation study found that NHTSA's passive restraint/safety belt rule cost only about $300,000 per life saved. As indicated in figure seven (with a summary in table three), this compares very favorably with other Federal health and safety regulations. For example, the comparable figure for the Environmental Protection Agency's asbestos regulation is $104.2 million; for the land disposal regulation the figure is $3.5 billion.

I should note, moreover, that the comparison between safety belts and other safety-related regulations would be even more favorable if manual, instead of passive, belts were considered. Manual belts are somewhat less costly than their passive counterparts. And as one can

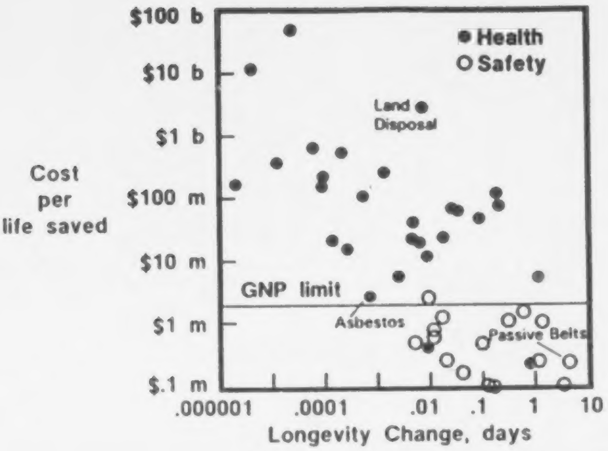


Figure 7: Cost effectiveness for life saving federal regulatory proposals and potential changes in longevity in the United States (based on data in (15) as presented in (16)).

Table 3

The Cost of Various Risk-Reducing Regulations Per Life Saved
(Adapted from Morrall III (15))

Regulation	Year	Agency	Initial Annual Risk*	Annual Lives Saved	Cost Per Life Saved (Thousands of 1984 $)
Steering Column Protection	1967	NHTSA	7.7 in 10^5	1,300.000	$100
Passive Restraints/Belts	1984	NHTSA	9.1 in 10^5	1,850.000	300
Alcohol and Drug Control	1985	FRA	1.8 in 10^6	4.200	500
Seat Cushion Flammability	1984	FAA	1.6 in 10^7	37.000	600
Children's Sleepware Flammability	1973	CPSC	2.4 in 10^6	106.000	1,300
Side Doors	1970	NHTSA	3.6 in 10^5	480.000	1,300
Concrete & Masonry Construction	1985	OSHA-S	1.4 in 10^5	6.500	1,400
Grain Dust	1984	OSHA-S	2.1 in 10^4	4.000	2,800
Arsenic/Copper Smelter	1986	EPA	9.0 in 10^4	0.060	26,500
Asbestos	1986	EPA	2.9 in 10^5	10.000	104,200
DES (Cattlefeed)	1979	FDA	3.1 in 10^7	68.000	132,000
Radionuclides/Elemental Phosphorous	1984	EPA	1.4 in 10^5	0.046	270,000
Benzene/Maleic Anhydride	1984	EPA	1.1 in 10^4	0.029	820,000
Land Disposal	1986	EPA	2.3 in 10^8	2.520	3,500,000
Formaldehyde	1985	OSHA-H	6.8 in 10^7	0.010	72,000,000

* Annual deaths per exposed population An exposed population of 10^3 is 1,000, 10^4 to 10,000 etc

easily see in figure seven, considerably more money is devoted to the implementation of regulations that address far less risk. After comparing risk versus resources spent, there should be no question as to whether S. 1007 makes sense.

The cost effectiveness of safety belts certainly does not, by itself, argue conclusively in support of making the use of this kind of technology mandatory. Taken in combination with the widespread availability of safety belts, however, as well as, their proven ability to prevent injuries in motor vehicle collisions, their reasonableness as a public health intervention, and their importance in reducing overall economic costs to society, the relatively high cost effectiveness of safety belts is, and remains, a strong point in their favor.

INJURY DISABILITIES AND IMPROVEMENTS IN SURVIVABILITY

Another factor to bear in mind when considering the use of safety belts and helmets is the extent to which unprotected victims of automobile and motorcycle crashes are not killed but, rather, are permanently disabled and unable to lead fully productive lives. In many respects, this kind of long-term or permanent disability constitutes the devastation of injury survival. Disability encompasses physical, intellectual and psychological deficits which precludes thousands of these people from returning to normal pre-injury life activities.

The Centers for Disease Control, for example, has estimated that over 200 million person-years of disability have resulted from all injuries, as shown in Table Four (17). Of this amount, disabilities resulting from unprotected victims of automobile and motorcycle crashes constitute a substantial percentage. In that regard, it is again possible to estimate a 8.4 percent reduction in disability years lost -- assuming an equivalent reduction as for injury fatalities -- if everyone in the United States used safety belts and helmets. That comes to over 16,000,000 disability years "regained."

It is important to recognize that as medical technology has advanced, it has become increasingly possible to survive with serious disabilities over the long term, when in the past such disabilities might have resulted in death. For example, in 1960 the average person with severe brain or spinal cord injury could expect to survive only a few years with serious disability. By the 1980's, however, the expected average survival period had increased to 35 years with new methods of sepsis (infection) control, and in 1990 and beyond it is anticipated that the average victim, even with severe disability, will have nearly a normal life expectancy (18). These victims will put further strain on our ability to provide human care, long term medical and rehabilitative services, and community programs because of a lack of resources and cutbacks in state and federal funding.

That disabled persons are surviving for longer periods of time after sustaining serious injuries is all to the good. Moreover, we can certainly be thankful that more-and-more less severely disabled persons are able to live full and productive lives. But I cannot help but think of the contributions

Table 4

Disability in America
(From Houk and Thacker (17))

Onset Age	Victims (mil)	Survival Years	Disability Years (mil)	Principal Etiology
< 15	5.6	50	280	DD/Injury
16-34	7.0	40	280	Injury
35-54	6.4	25	161	Injury/CD
55 +	8.7	10	87	CD/Injury
			200 mil for Injury	

that seriously disabled persons who are perhaps not so fortunate would surely have made to our society if they had not been injured in the first place. In my view, this -- the lost productivity and disrupted lives that can result from permanent disability -- makes it even more imperative than ever to do whatever is necessary, within reason, to encourage the use of safety belts and helmets, thereby preventing needless crippling and disabling injuries.

CONCLUSION

In my testimony today, I have tried to make a number of important points in support of S. 1007.

First, serious injuries are a principal cause of death and disability among all Americans, but especially among young persons. Moreover, among accidental causes, death and disability resulting from motor vehicle crashes constitute a disproportionate share.

Second, effective and relatively inexpensive means already exist to reduce the number of injuries that result from motor vehicle crashes. These are the use of automobile safety belts and motorcycle helmets. The use of safety belts and helmets by more Americans would substantially increase the number of lives saved and disabilities prevented each year in crashes on the Nation's roads and highways.

Third, safety belts -- especially lap and shoulder belts -- are a proven technology that is available now. It is the single most effective method for preventing injury in automobile crashes. In that regard, airbags, although a positive automotive safety feature, are not by themselves an adequate substitute for safety belts.

Fourth, the economic consequences to society that occur as a result of the injuries sustained in automobile and motorcycle crashes are extremely high. Widespread use of safety belts and helmets would result in major savings for the country.

Fifth, safety belt technology is cost effective, particularly when compared with other Federal health and safety requirements. Indeed, there are virtually no other health or safety programs that produce as much benefit to Americans.

Finally, recent advances in medical technology have made it possible for persons with serous injury-related disabilities to survive for increasingly long periods of time and needing considerable private and public sector resources. This makes the consequences of our failure to prevent these injuries all the more costly.

Mr. Chairman, earlier in my testimony I compared the effort to save lives in crashes on the Nation's roads and highways to the effort to rid the United States of illegal drugs. while I realize that the analogy may not be entirely apposite, I find it useful nonetheless. For in both cases, we face problems that have tragic human consequences. Yet, perhaps because of their sheer enormity, many apparently consider both insurmountable and unsolvable. But the silver lining here is that the billions of dollars saved by this legislation could be the desperately needed funds to fight drug use in America.

I do not share in the general pessimism about effective intervention, and I trust that you do not, either. Regarding illegal drugs, I note that the Senate has taken major steps within the past three weeks to intensify the Nation's fight against illegal drugs. Frankly, I think that it is time for us to do the same in the fight against death and disabling injuries on our roads and highways. We have an opportunity to make a difference -- we can save lives and money with enactment of this bill.

However, enactment of S. 1007 will not eliminate motor vehicle collisions. Nor will it do away with deaths and injuries even as driving safety continues to improve. But, as we have seen, it will result in a major reduction in the casualities and life-long disabilities we are suffering in this battle. Safety belt and helmet use is an important part of a total strategy to combat motor vehicle fatalities and injuries (19). Mr. Chairman, driving safety and enjoyment is a goal I know that you, I, the AAAM and NHIF, and all Americans share.

Mr. Chairman and members of the Subcommittee, thank you again for the opportunity to appear before you today. I look forward to working with you to achieve enactment of S. 1007.

I would be pleased at this time to answer any questions that you care to put to me.

References

1. Rice, D.P., MacKenzie, E.J. et al., "Cost of Injury in the United States. A Report to Congress 1989." Institute for Health & Aging, University of California, San Francisco and Injury Prevention Center, The Johns Hopkins University, for NHTSA and CDC, October, 1989.

2. Evans, L., Frick, M.C., and Schwing, R.C., "Is it Safer to Fly or Drive? -- A Problem in Risk Communication." General Motors Research Publication GMR-6722, General Motors Technical Center, Warren, MI, June, 1989.

3. --- "Injury in America: A Continuing Public Health Problem," Committee on Trauma Research, Commission on Life Science, National Research Council and the Institute of Medicine, National Academy Press, Washington, DC, 1985.

4. Viano, D.C., "Cause and Control of Automotive Trauma." Bulletin of the New York Academy of Medicine, Second Series, 64(5):376-412, 1988.

5. Viano, D.C., "Limits and Challenges of Crash Protection." Accident Analysis and Prevention, 20(6):421-429, 1988.

6. Evans, L., "The Effectiveness of Safety Belts in Preventing Fatalities." Accident Analysis and Prevention, 18:229-241, 1986.

7. Evans, L., and Frick, M.C., "Helmet Effectiveness in Preventing Motorcycle Driver and Passenger Fatalities." Accident Analysis and Prevention, 20:447-458, 1988.

8. Evans, L., "Rear Seat Restraint System Effectiveness in Preventing Fatalities." Accident Analysis and Prevention 20:129-136, 1988.

9. Evans, L., "Restraint Effectiveness, Occupant Ejection from Cars, and Fatality Reductions." General Motors Research Publication GMR-6398, General Motors Technical Center, Warren, MI, September 1, 1988.

10. Viano, D.C., "Relative Safety Effectiveness of Driver Airbags and Rear-Seat Lap-Belts." General Motors Research Laboratories Publication GMR-6743, General Motors Technical Center, Warren, MI, July 13, 1989.

11. Partyka, S.C., "Lives Saved by Seat Belts from 1983 Through 1987." National Center for Statistics and Analysis, National Highway Traffic Safety Administration, Washington, DC, June 1988.

12. Champion, H.R. and Mabee, M.S., "An American Crisis in Trauma Care Reimbursement." Washington Hospital Center, Washington, DC, October 4, 1989.

13. Rivara, F.P., Dicker, G.B., Bergman, A.B., Dacey, R., Herman, C., "The Public Cost of Motorcycle Trauma." Journal of American Medical Association 260:221-223, July 8, 1988.

14. **Orsay, E.M., Turnbull, T.L., Dunne, M., Barrett, J., Langenberg, P., and Orsay, C.P., "Prospective Study of the Effect of Safety Belts on Morbidity and Health Care Costs in Motor-Vehicle Accidents." Journal of American Medical Association 260(24):3598-3603, 1988.**

15. Morrall, J.F., "A Review of the Record." Regulation 25-34, November/-December, 1986.

16. Schwing, R., "Conflicts: The Common Denominator of Health/Safety Programs." Proceedings of the American Society of Civil Engineering (Highway Division) Conference Highway Safety at the Crossroads, San Antonio, TX, March 28-30, 1988, pp. 113-122, American Society of Civil Engineers, New York, 1988.

17. Houk, V.N., and Thacker, S.B., "The Centers for Disease Control Program to Prevent Primary and Secondary Disabilities in the United States." Public Health Reports 104(3):226-231, 1989.

18. ---, "Staggering Cost of Serious Auto Crashes Continues." Journal of American Insurance 59:10-13, 1983.

19. Graham, J.D., (ed.) Preventing Automobile Injury -- New Findings from Evaluation Research, Auburn House, Dover, MA, pp. 51-72, 1988.

Testimony Concerning the National Highway Fatality and Injury Reduction Act of 1989

Presented to
The Sub Committee on Water Resources
Transportation and Infrastructure
of the
U.S. Senate Committee on the
Environment and Public Works

By Ralph Hingson, Sc.D.
Chief, Social and Behavioral Sciences
Boston University School of Public Health

October 13, 1989

I would like to offer my support for S. 1007, the National Highway Fatality and Injury Reduction Act of 1989. It may help to reinstate mandatory safety belt legislation in Massachusetts, which in turn would increase belt use and reduce injuries on our highways.

On January 1, 1986, Massachusetts became the sixteenth state to implement mandatory Safety Belt Legislation, but just eleven months later Massachusetts became the first state to repeal a belt law by a 53% - 47% binding referendum vote.

My office monitored public support and opposition for mandatory safety belt legislation before the law, after the law was enacted, and after repeal. We also evaluated the effects of the law on safety belt use, occupant injuries and deaths, and the subsequent effects of the repeal on belt use and injuries. (see attached article)

Public Support and Opposition to the Law:

A cross-sectional, random digit dial telephone survey of 1,008 Massachusetts residents in August 1985, before the law passed, revealed 58 percent of respondents supported mandatory safety belt legislation. That was consistent with two other independent surveys. A survey of 1,046 Massachusetts residents in the summer of 1986 revealed similar majority support. Sixty-one percent said they would vote to keep the law if the vote occurred that day.

When the law was repealed, we immediately re-contacted all the summer respondents to explore reasons for the repeal. Eighty percent were re-interviewed, 9% refused, and 11% died or moved away. Of the persons who supported the law during the summer of 1986 and who voted in November, 15% switched their position and voted for repeal. In contrast, only 4% of those who opposed the law during the summer switched and voted to keep it in November.

Support for the law eroded because the law was increasingly seen as an invasion of personal liberty and viewed as ineffective in reducing injuries and deaths. Among summer supporters, persons who believed the law to be more of an invasion of personal liberty in December than they did in the summer,(27%) were seven times more likely to switch for repeal. Those who saw the law as less effective in reducing injuries and death in December than during the summer, (22%) were five times more likely to switch and vote for repeal.

Regarding the effectiveness of the belt law in reducing injury, the Massachusetts public did not have accurate data available to them prior to the repeal. The Boston Globe ran a front page story two weeks after our summer survey that reported inaccurate data indicating Massachusetts traffic fatalities increased 10% after the safety belt law. Other media also publicized those data. Further, post law traffic occupant injury data from Massachusetts were not available until several months after the repeal. National evaluations assessing the effects of mandatory belt law in other states were also not published until after the repeal.

Effects of the Massachusetts Belt Law:

The Massachusetts safety belt law was in effect from January through November 1986. In Massachusetts, several separate statewide direct observation studies of belt use in over 10,000 vehicles at 160 randomly selected intersections indicated belt use increased from 20% before the law went into effect in December 1985, to 37% in February 1986 after the law was enacted and to 34% in August 1986. After the law was repealed, belt use dropped to 24% statewide in December 1986, and belt use remained at that level in one year later (Table 1).

Statewide, anonymous, random digit dial telephone surveys conducted in 1985 before the law, in 1986 while the law was in effect and 1988 after repeal, indicated that the highest risk drivers (those who report that they speed 20+ miles over the limit, run red lights, drive drunk etc.) were less likely than other drivers to adopt belt use when the law was in effect.

Occupant Deaths:

A comparison of occupant deaths in Massachusetts to other New England states without belt laws from 1982 to 1988 indicates that neither the law nor its repeal had a significant effect on the numbers of occupant deaths in Massachusetts. (Figure 1)

However, many more traffic injuries than deaths occur. Data on injuries from the Massachusetts Registry of Motor Vehicles indicate that from January through November 1985, before the law, to January through November 1986, after the law, total occupant injuries declined 22% from 78,564 to 61,592. After repeal, total injuries increased 11% to 68,072 during the same 11 months. Visible occupant injuries decreased 27% from 1985 to 1986 from 37,286 to 27,185. After repeal, they increased 5% to 28,566. The shifts in occupant injury were all statistically significant. (Figure 2) While it is difficult when analyzing only one state to be certain those changes resulted from the law, the occupant injury pattern was consistent with rises and declines in belt use that preceded and followed the law and its repeal, and they lead me to believe the law was responsible.

National Effects of Mandatory Belt Laws:

Mandatory belt laws are now in place in over 30 states covering 80% of the U.S. population. The laws have typically been associated with increases of belt use from 20% before the laws to 40-60% after implementation. When states with laws have been compared to those without laws, the laws have typically been followed by 5-10% occupant fatality reductions and 5-15% occupant injury reductions.[2,3] The U.S. Department of Transportation has estimated that from 1983 through 1988, 10,500 lives were saved because of mandatory belt use legislation. They further projected that were states without laws to obtain levels of belt use comparable to states with laws, 4,000 additional lives would have been saved in 1988.

Recommendation:

A random digit dial survey of over 2,000 Massachusetts adults in 1988 conducted by my office indicates the public in Massachusetts remains evenly split about the desirability of Mandatory Safety Belt Legislation. A repeat direct observation study in April 1989 indicates use is still well below the level obtained during the safety belt law, and occupant injuries in 1988 remain 10% higher than they were during the law.

Passage of S. 1007 could reopen debate in Massachusetts about the benefits of Mandatory Safety Belt laws. This time, however, our lawmakers and citizens could have the benefit of information about the effects of belt laws in reducing injury and death nationally and injuries in Massachusetts.

TABLE 1

OBSERVATION STUDY
PERCENT SEAT BELT USE BY DISTRICT

	PRE LAW	POST LAW		POST REPEAL	
	DEC '85	FEB '86	AUG '86	DEC '86	DEC '87
OVERALL STATEWIDE RATE	20%	37%	35%	24%	24%
OVERALL NON-FREEWAY RATE	17	34	32	21	21
OVERALL FREEWAY	26	44	40	30	29
DISTRICT:					
1. Far Western Mass. Overall	21	50	51	26	28
2. Springfield-Amherst Overall	18	44	33	22	22
3. Worcester-Leominster Overall	22	41	32	22	22
4. Framingham-Marlborough Overall	27	38	39	30	28
5. North Shore Overall	18	39	30	25	25
6. Fall River-New Bedford Overall	15	34	30	19	21
7. S.E. Mass. and Cape Overall	19	35	26	18	18
8. Boston and suburbs Overall	19	32	33	24	22

* Weighted to reflect road type and sampling selection of towns.

FIGURE 1

OCCUPANT DEATHS
MASSACHUSETTS VS. NEW ENGLAND STATES WITHOUT BELT LAWS

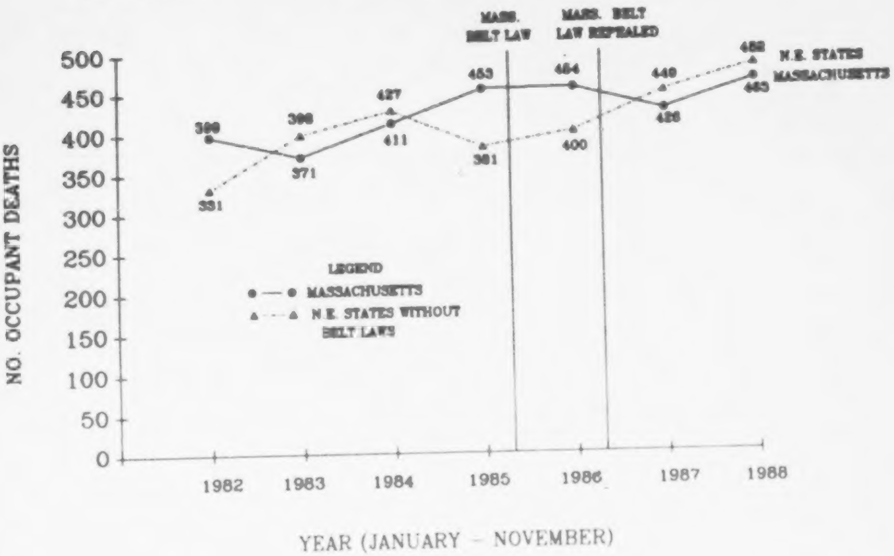
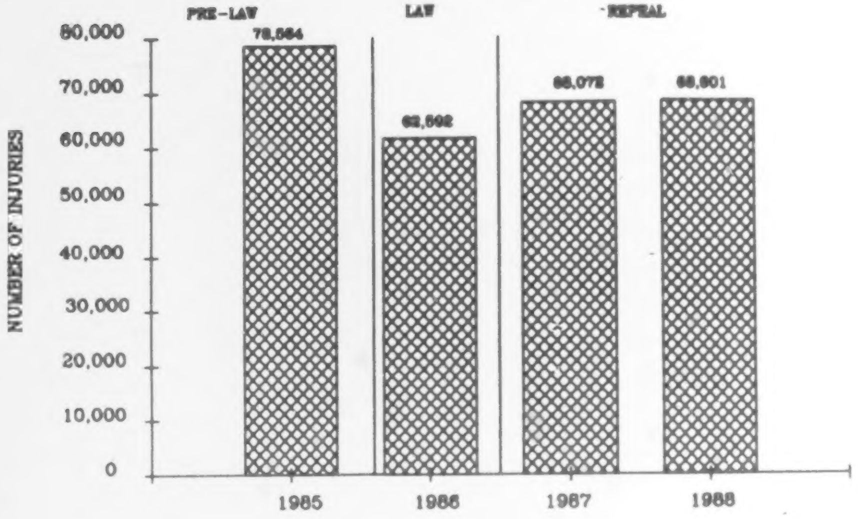
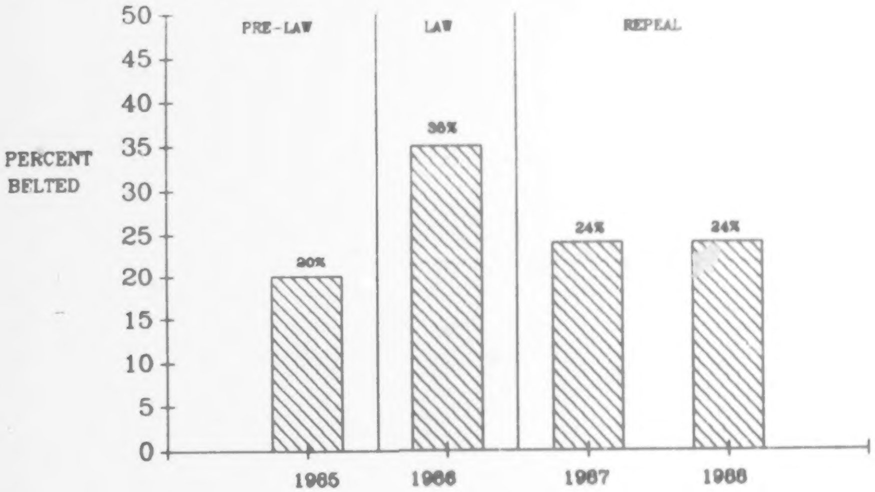


FIGURE 2

MASSACHUSETTS OCCUPANT INJURIES
JANUARY - DECEMBER
1985 - 1988



MASSACHUSETTS SEAT BELT OBSERVATION STUDY
1985 - 1988



REFERENCES

1. Hingson R, Levenson S, Heeren T, et al: Repeal of the Massachusetts Seat Belt Law, American Journal of Public Health 1988:548-552.

2. Williams AF, Lund AK: Mandatory seat belt use laws and occupant crash protection in the United States: Present status and future prospects. in J. Graham (ed) Preventing Automobile Injury Auburn House Publishing, Dover, Mass, pp.51-72, 1988.

3. Campbell BJ, Campbell FA: Injury reduction and belt use associated with occupant restraint laws. in J. Graham (ed) Preventing Automobile Injury Auburn House Publishing, Dover, Mass, pp.24-50, 1988.

4. U.S. Department of Transportation, 1988. Traffic Fatality Facts, National Center for Statistics and Analyses, 400 Seventh St., S.W., Washington, D.C., July 1989.

Repeal of the Massachusetts Seat Belt Law

RALPH HINGSON, SCD, SUZETTE MORELOCK LEVENSON, MPH, TIMOTHY HEEREN, PHD,
THOMAS MANGIONE, PHD, CYNTHIA RODGERS, MS, TERRANCE SCHIAVONNE, AND ROBIN P. HERTZ, PHD

Abstract: In November 1986, the Massachusetts mandatory seat belt use law was repealed in a referendum by a 53 per cent to 47 per cent vote. In an anonymous random digit telephone survey of 1,046 adults in Massachusetts in summer 1986, while the law was in effect, 61 per cent of respondents had said they would vote in favor of the law. A post-repeal follow-up of 80 per cent of these persons revealed initial supporters and opponents of the law were equally likely to vote, but 15 per cent of the summer supporters switched their opinions and voted for repeal, compared to only 4 per cent of summer opponents who switch[illegible] In addition, a separate survey of 167 households that had refused to answer the summer survey indicated that survey nonrespondents were more likely to vote against the law than for it. Those opposing the law saw it as an infringement on personal liberty and believed it was not effective in reducing injury and death. (*Am J Public Health* 1988; 78:548–552.)

Introduction

Between 1984 and mid-1987, 27 states and the District of Columbia had passed mandatory seat belt use laws. However, on November 4, 1986, by a vote of 53 per cent to 47 per cent in a binding referendum, Massachusetts became the first state to repeal seat belt legislation. Nebraska followed suit a few days later and since that time repeal legislation has been filed in 11 states and referenda have been filed in five states. Most of these repeal activities have failed. Oregon, however, has passed a bill to place a repeal referendum on the November 1988 ballot.

The Massachusetts seat belt law required motor vehicle drivers and front and back seat passengers five years of age and older to use seat belts. Only on-duty police officers, bus passengers, and persons who make frequent stops to leave their vehicles were exempted from the law. Children under age five were already required by previous legislation to be restrained. As in 20 of the 28 jurisdictions with belt laws, police were allowed to give citations only if the vehicle had been stopped for some other violation. The fine was $15.

Between the passage of the law by the legislature on October 22, 1985 and its effective date of January 1, 1986, considerable efforts were made to inform Massachusetts residents of the law's provisions. The Executive Office of Public Safety, the Governor's Highway Safety Bureau, the Passenger Safety Program of the Massachusetts Department of Public Health, the Seat Belt Coalition, the Passenger Safety Association, the Registry of Motor Vehicles, and other professional associations and service clubs participated in these efforts. In addition to informing people of the law's components, these groups provided information on the benefits and proper use of seat belts. One million information cards were distributed at turnpike toll booths and in schools, and highway signs were posted statewide. Because of their low prelaw belt use, teenagers, the elderly, and blue collar workers were the focus of these efforts.

Almost immediately after the law went into effect, people who survived serious crashes because they wore belts were recruited to participate with the Governor and local officials in public information campaigns. The Governor's Highway Safety Bureau assigned safety belt coordinators in five cities and recruited volunteers in 90 cities across the state. Toll free hot-lines were set up by the Bureau to answer questions about seat belts.

At the same time, an Eastern Massachusetts radio talk show host, Jerry Williams, mounted a drive to place a binding referendum to repeal the law on the November 1986 ballot. The requisite 35,000 signatures were secured. During the entire time the law was in place, Williams and others on his talk show campaigned against the law. He debated proponents of the law on neutral forums and occasionally accepted their calls on his radio program.

Although Williams indicated he wore belts and encouraged others to do so, he maintained the law was an intrusion on personal freedom. He predicted that primary enforcement, stiffer penalties for not wearing belts, and government intrusion in other areas such as workplace drug testing would follow if the belt law was not repealed. He contended that the law had been promoted by the automobile industry in an effort to avoid a federal requirement to install passive restraints in new vehicles and thus reduce costs. Although Williams did not challenge the validity of official data concerning the effectiveness of safety belts in reducing injury and death, he maintained that government reports on the law's effects were constantly changing and inconsistent. He also cited a National Transportation Safety Board study that questioned the effectiveness of rear seat lap belts.

During the week before the election, advertisements supporting belt use were aired statewide on network television. The ads were paid for by Traffic Safety Now, a national organization of automobile manufacturers concerned with promoting belt use. Williams and his group of opponents were given equal television air time to respond to these ads. They argued that the law gave police power to infringe on individual liberty and that it had been promoted by the automobile industry in an attempt to avoid regulations to install passive restraints in all new automobiles.

Direct observation studies revealed that statewide seat belt use increased from 20 per cent before the law to 37 per cent after the law became effective. Vehicle occupant deaths declined 5 per cent per 100 million vehicle miles traveled during the months the law was in effect relative to the same months the previous year. In the neighboring New England states without belt use laws (Maine, New Hampshire, Rhode Island, and Vermont), belt use remained at 24 per cent in 1986 and vehicle occupant deaths increased 1 per cent per 100

From the Boston University School of Public Health (Dr. Hingson, Ms Levenson, Dr. Heeren, Dr. Mangione); the Center for Survey Research, University of Massachusetts/Boston (Dr. Mangione); the Massachusetts Department of Public Health (Ms. Rodgers); the Massachusetts Governor's Highway Safety Bureau (Mr. Schiavonne); and the Insurance Institute for Highway Safety (Dr. Hertz). Address reprint requests to: Insurance Institute for Highway Safety, Watergate 600, Suite 300, Washington, DC 20037. This paper, submitted to the Journal April 13, 1987, was revised and accepted for publication October 23, 1987.

© 1988 American Journal of Public Health 0090-0036/88$1.50

million vehicle miles traveled. Local Massachusetts police departments reports indicate that, of 390,117 traffic tickets issued during the months the law was in effect, 13,321 tickets were issued for not wearing belts. The Massachusetts State Police and its affiliated agencies issued another 10,459 citations for not wearing belts (data available on request).

A cross-sectional random digit telephone survey of 1,008 Massachusetts residents in August 1985, before the law was passed, indicated 58 per cent of respondents supported mandatory seat belt legislation. This finding was consistent with two other independent surveys.[1,2] A survey of 1,046 Massachusetts residents in the summer of 1986, while the law was in effect, indicated similar majority support (data available on request).

This paper explores why, if a majority of the public claimed to support it, the law was repealed a few months later. Information from the telephone surveys was analyzed in an attempt to answer the following questions:

- How strong was initial support for the law during the summer-of-1986?
- Were persons who favored the law in the summer of 1986 less likely to vote than those who opposed it, and what influenced voter turnout?
- How did the sample vote, and did the 1986 sample disproportionately miss people who voted against the law?
- Did voting respondents change their minds between the summer of 1986 and November and, if so, why?
- What were the characteristics and beliefs of persons who voted for and against the seat belt law?
- Who influenced persons who supported or opposed the law?
- Did changes in belt use before, during, and after the seat belt law relate to how respondents voted?
- What measures would increase seat belt use?

Methods

In July 1986, 1,453 households throughout Massachusetts were selected, using random digit telephone sampling methods developed by Waksberg,[3] to participate in a traffic safety survey. One adult per household was randomly selected for interview using a variation of methods developed by Kish.[4] With 1,046 persons interviewed during July and August, the survey achieved a 72 per cent response rate; 18 per cent of the eligible sample refused to be interviewed, 5 per cent did not complete the interview because of illness or language difficulties, and 5 per cent of the eligible households did not answer their telephones within eight attempts.

In December 1986, three weeks after the repeal of the seat belt law, attempts were made to recontact all summer respondents to explore public opinion about the seat belt law and reasons for its repeal. Because interviewers did not know the names of respondents in the initial survey but knew the telephone numbers, age and sex were used to identify adults for follow-up. Respondents at follow-up were asked questions about their support for, or opposition to, the law; reasons for their position; whether they voted; whether they switched positions since the summer of 1986, and, if so, why.

Eighty per cent of persons interviewed in the summer were reinterviewed, 9 per cent refused to be interviewed, and 11 per cent had died or moved away. Of the 830 survey participants, 53 would not complete the entire survey but did answer questions about whether and how they voted. In addition to the follow-up interviews, 64 per cent of the households that had refused to be interviewed in the summer were contacted; 327 persons in 167 households told interviewers how they voted in the election.

TABLE 1—Voting Behavior in November 1986 Election of Persons Who Supported and Opposed the Seat Belt Law in the Summer*

November Election Behavior	Summer Position Regarding Law			
	For N = 512	Against N = 293	Don't Know N = 25	Total Sample N = 830
Per Cent Voting (N = 524)	62	65	64	63
Of Voters, Per Cent				
For (N = 278)	83	4	27	53
Against (N = 237)	15	95	53	46
Don't Know (N = 9)	2	1	20	2

*Data weighted by household size

Data were weighted by the number of adults in the household to reflect the sampling design and remove the bias of oversampling single person households. A stepwise logistic regression model was used to determine independent predictors of whether supporters of the law in summer voted for repeal or maintained support in November.

Results

- *How strong was initial support for the law during the summer of 1986?*

In summer 1986, when asked if they were to vote on the day of the interview, 61 per cent of the respondents indicated they intended to vote to keep the seat belt law. When asked about the strength of their support, 42 per cent said they strongly supported the law.

Another measure of support is use of seat belts. The proportion of respondents who indicated they always wore belts increased from 20 per cent before the law to 41 per cent after its implementation. (Observed belt use statewide rose from 20 per cent to 37 per cent.) As had been observed elsewhere,[5] belt use was not adopted by surveyed drivers who reported the most crashes and injury crashes, namely younger, single males who drive more miles, drive more often after heavy drinking and drug use, and more often speed and run red lights.

- *Were persons who favored the law in the summer of 1986 less likely to vote than those who opposed it, and what influenced voter turnout?*

Sixty-two per cent of those favoring and 65 per cent of those opposing the law in the summer said they voted in November (Table 1). With 24 per cent of voting opponents and 15 per cent of voting supporters citing the seat belt law as the major reason they voted, this issue was more important to the respondents than the gubernatorial or congressional races. However, 27 per cent of voting supporters and 37 per cent of voting opponents did not know the seat belt referendum was binding.

- *How did the sample vote, and did the 1986 sample disproportionately miss people who voted against the law?*

Table 1 indicates the actual voting of the sample relative to how they said they would vote in the summer. The voting members of the sample were more likely to have voted for the law than were the state's electorate. Fifty-three per cent of the voting respondents voted for and 45 per cent voted against the law.

Of the 327 persons in 167 households who refused to be interviewed in the summer, 58 per cent said they voted on the seat belt question, 43 per cent in favor, 47 per cent against, and 9 per cent unsure. Thus, summer non-respondents were less likely than respondents to vote for the law. In addition, the 53 respondents who answered only questions about whether and how they voted differed from those who answered the complete survey: They were less likely to have voted in November (58 versus 64 per cent), more likely to have voted against the law (55 versus 45 per cent), and more likely to have forgotten how they voted (10 versus 1 per cent) than those who participated in the full interview. This suggests that those who refused to participate at all in the December follow-up survey were less favorable toward the law than those who did.

Assuming that December nonrespondents were like the respondents who provided only voting information and that summer nonrespondents who did not supply November voting data were like those who did, overall, it is estimated that among the original summer sample (respondents and nonrespondents) who voted, 48 per cent supported the law, and 47 per cent opposed it; the vote of the final 4 per cent is not predicted. Compared to the actual state electorate's vote, these data fall within the 6–7 per cent sampling error of a sample of approximately 500 voters selected through random digit telephone procedures.

- *What were the characteristics and beliefs of persons who voted for and against the seat belt law?*

Higher proportions of females, college educated people, and people who drove fewer miles in the past year supported the seat belt law in the election (data available on request). Respondents who said they wore their belts all the time while the law was in effect were also much more likely to vote for the law than those who did not, 74 per cent versus 39 per cent. Those who reported driving after having had five or more drinks or after drug use in the month preceding the interview were less likely to vote for the law than the other respondents (33 per cent versus 55 per cent, and 20 per cent versus 55 per cent, respectively).

Those who reported speeding, running red lights, having been ticketed for moving violations, or having been involved in crashes in the past year were no more or less likely to vote for this law than other drivers. The sharpest attitudinal difference between persons voting for or against the seat belt law concerned whether respondents felt the seat belt law was an invasion of personal freedom.

- *Did voting respondents change their minds between the summer of 1986 and November and, if so, why?*

Table 1 indicates that 15 per cent of voting summer supporters and 4 per cent of voting summer opponents apparently changed their positions. Of those who switched, 26 per cent stated they changed their minds within four days of the election.

In an open-ended question asked of those who switched, 75 per cent of voting summer supporters said they switched because the law invaded personal freedoms. Another 8 per cent said they favored belt use but opposed the law and 8 per cent indicated that belts offer little benefit or could be harmful.

Certain questions about the seat belt law were asked in the summer and repeated in December. Responses from the two surveys were cross-tabulated. Table 2 shows changes in perceptions about the law from summer to December. Initial supporters who then voted for repeal believed in December that the belt law invaded personal freedoms. Also, they perceived the law to be less effective than they believed previously.

TABLE 3—Predictors for a November Vote against the Seat Belt Law by Those Who Supported It in Summer*

Independent Predictors	Odds Ratio	95% Confidence Interval
Belt law more invasive of personal freedoms	7.39	(2.44, 12.86)
Seat belts are uncomfortable	3.35	(1.31, 8.54)
Belt law less effective in reducing traffic injuries and deaths	4.91	(1.46, 16.51)
Ran a red light in the past week	3.44	(1.04, 11.35)

*From stepwise logistic regression

Table 3 presents results of a stepwise logistic regression analysis showing major predictors of summer supporters' actual voting behavior. A complete list of the variables entered and eliminated is shown in the Appendix. Persons who in December believed the law to be more of an invasion of personal liberty than they believed in the summer were 7.4 times more likely to have switched from support to opposition. Those who, in December, saw the law as less effective than they believed in the summer; those who, in the summer, believed belts were uncomfortable, and those who ran red lights in the past week were respectively, 4.9, 3.3, and 3.4 times more likely to switch. Demographic characteristics, summer belt use, and driving behavior including annual mileage, speeding, and driving after alcohol or drug use, were considered but did not meet the 0.10 significance criterion for entry into the model.

- *Who influenced persons who supported and opposed the law?*

The automobile industry, insurance companies, and state or federal government were all seen as favoring the law by both supporters and opponents. None of these groups swayed significantly more respondents to vote for or against the law. Forty-three per cent of the voting supporters and 27 per cent of the voting opponents indicated other people influenced their vote. Family was the most influential with supporters (15 per cent), and radio was the most influential with opponents (9 per cent).

When asked who were the most widely known persons supporting and opposing the law, 57 per cent of summer supporters and 66 per cent of summer opponents cited Massachusetts Governor Michael Dukakis as the best known person supportive of the law. Twenty-nine per cent of summer supporters and 31 per cent of summer opponents, respectively, cited radio talk show host Jerry Williams as the best known opponent. Twelve per cent of voting respondents indicated they were influenced to support the law by the Governor and 4 per cent said they were influenced against the law by Jerry Williams.

Respondents were asked whether in the past few months they heard about any studies concluding that seat belts in rear seats may not be effective and if so whether that influenced their vote. (During that period a study released by the National Transportation Safety Board suggesting that lap belts can be harmful to rear seat occupants received widespread publicity.[6]) Although only 1 per cent of all voting respondents said they were influenced by that report to vote against the law, 44 per cent of summer supporters and 41 per cent of summer opponents were aware of its findings.

TABLE 3—Changes in Perceptions about the Seat Belt Law among Summer Supporters in the November 1986 Election

Belief in December Relative to Summer	Per Cent Summer Supporters Who Switched Position N = 48	Per Cent Summer Supporters Who Maintained Support N = 270
Law invades personal freedom*		
More strongly agree	83	47
No change	10	37
Less strongly agree	7	16
Law effective in reducing injury*		
More strongly agree	7	22
No change	56	61
Less strongly agree	37	17

*p < 0.02

• *Did changes in belt use before, during, and after the seat belt law relate to how respondents voted?*

Respondents interviewed in the summer and December 1986 surveys reported their belt use prior to the law in December 1985, during the law in summer 1986, and after repeal in December 1986. Nineteen per cent, 59 per cent, and 37 per cent, respectively, said they always wore belts prior to the law, during the law, and after repeal.

Sixty-seven per cent of the voters who never consistently wore belts opposed the law in November. In contrast, 18 per cent of the voters who always wore belts before, during, and after repeal of the law opposed the law in November.

• *What measures would increase seat belt use?*

In the summer survey, respondents who did not always wear seat belts were asked whether a series of measures by the state would make them more likely to wear belts. The entire sample was also asked whether they supported or opposed those measures. Opposition was strongest for measures most likely, according to the respondents, to increase belt use—stiffer fines, primary enforcement, and higher insurance costs for unbelted drivers (Table 4). Support was greatest for more education, the measure least likely, according to the respondents, to stimulate belt use.

Discussion

The summer 1986 survey indicated greater support for the seat belt law than appeared in the November vote. The December 1986 survey indicated that persons who ultimately voted against the law were more likely to have refused to be interviewed in the summer survey on traffic safety. It is also possible that in December those opposed to the law were more likely to refuse to be interviewed. Of respondents followed in December, 63 per cent indicated they voted on the seat belt question while state voting records indicate only 55 per cent of the state's registered voters voted on the seat belt referendum. Non-voters may also have been disproportionately unwilling to participate in the surveys. It is likely that the biases introduced by survey refusal are not unique to Massachusetts but rather are relevant to all surveys on this issue.

TABLE 4—Summer 1986 Survey Respondents Support for Measures That Would Increase Seat Belt Use

Measure	Per Cent Supporting Measure*	Per Cent More Likely to Wear Seat Belts if Measure Were Adopted**
Increase the fine for not wearing belts to $100	33	70
Police could stop cars just because occupants are not wearing belts	38	75
Increase insurance of people who have accidents while not wearing belts	59	77
Police became much more likely to give tickets to unbelted drivers	54	74
More public education on benefits of seat belt use	92	57

*Asked of all respondents.
**Asked of anyone who has not always worn belts since the law became effective.

Another important reason for the unexpected repeal of the law was that summer supporters were more likely to change their minds than were opponents of the law. Also, those who were initially undecided were much more likely to vote against the law.

The finding that 26 per cent of those who switched to opposition did so within four days of the election points to the importance of late campaigning. Although radio talk show host Jerry Williams was cited as an influence by fewer voters (than was Governor Dukakis who supported the law), he was cited as an influence by a crucial 4 per cent of the voters in a very close election. Moreover, 9 per cent of those voting for repeal cited the radio as the communication medium most influential to them.

The post-repeal survey indicated that invasion of personal liberty and perceived effectiveness of a law in reducing injury and death are the crucial issues on which a seat belt referendum can turn. By November, respondents who switched allegiance and voters against the law cited infringement of personal liberty as the reason for their shift. Many of those same respondents perceived the law to be less effective in reducing injury and death in November than they had earlier in the year. Both of these issues received considerable media attention.

Regarding the effectiveness of belts, within two weeks after the summer 1986 survey was completed, the media reported on the National Transportation Safety Board study of the potential dangers of rear seat lap belts.[8] During the same week, the *Boston Globe* reported that traffic deaths increased 10 per cent after the Massachusetts law went into effect. People may tolerate some loss of personal freedom if they believe the sacrifice will achieve some benefit, but in the perceived absence of death reductions, seat belt laws may be viewed by many voters as requiring an unnecessary sacrifice of personal freedom.

Massachusetts residents made decisions even before the November election that contributed to the law's demise. Compliance with the law was low, particularly among high-risk

APPENDIX
Prediction for a November Vote against the Seat Belt Law by Those Who Supported It in the Summer

Independent Variables	Odds Ratio	95% CI
Belt law more invasive of personal freedom	7.04	(2.32, 21.35)*
Belt law less effective in reducing traffic injuries and deaths	5.04	(1.48, 17.16)*
Ran red light past month	4.05	(1.07, 15.38)*
Seat belts are uncomfortable, inconvenient and easy to forget (Very True vs Not at All True)	3.68	(0.95, 14.27)
Drove after marijuana use past month (Never vs 5 Times)	3.12	(0.15, 64.24)
Education (Less than High School vs College Graduate)	1.75	(0.57, 5.36)
Miles drove last month (None vs ≥25,000)	1.74	(0.38, 8.28)
Received ticket for moving violation	1.55	(0.47, 5.13)
Drove after drinking last month	1.41	(0.50, 3.92)
Never married vs married	1.32	(0.45, 3.83)
August seat belt use	1.22	(0.75, 1.99)
It is dangerous to drive without seat belts, less likely to be injured if belted (Very True vs Not at All True)	1.21	(0.12, 12.32)
Divorced vs Never Married	1.17	(0.46, 3.00)
Drove 20 MPH over speed limit	1.08	(0.35, 3.35)
Gender (Females)	1.02	(0.44, 2.41)

NOTE: Complete List of Variables Entered in the Regression (Table 3)
*$p < .05$

drivers. Resistance to stiffer penalties and primary enforcement, measures that might increase belt use, was high. Thus, marked life-saving benefits associated with seat belt use were not realized and the law's supporters were deprived of their strongest argument. In the aftermath of the repeal, belt use in Massachusetts has declined from a post-law high of 37 per cent to 24 per cent, only 5 per cent higher than during the pre-law year (data available on request). If seat belt legislation in the United States is to realize its full occupant protection potential, active law enforcement and meaningful penalties are essential.

ACKNOWLEDGMENTS

This research was supported by the Insurance Institute for Highway Safety. The initial survey and analyses were supported by the Commonwealth Fund, Massachusetts Governor's Highway Safety Bureau, the National Institute on Alcoholism and Alcohol Abuse, and the CDC New England Injury Prevention Center. Survey data were collected by The Center for Survey Research of the University of Massachusetts at Boston.

REFERENCES

1. Massachusetts Department of Public Health, Division of Family Health Services: 1984 Observational Survey Study. Boston, MA: Massachusetts Department of Public Health, March 1985.
2. Massachusetts Seat Belt Coalition: Surveys Indicate Massachusetts Drivers Favor Safety Belt Use Law by Two to One. News Release April 29, 1985, Boston, MA.
3. Waksberg J: Sampling methods for random digit dialing. J Stat Assoc 1978, 73:40–46.
4. Kish L: Survey Sampling. New York: Wiley, 1965.
5. Williams A, Lund A: Seat belt laws and occupant crash protection in the United States. Am J Public Health 76:1438–1442, 1986.
6. National Transportation Safety Board: Performance of Lap Belts in 26 Frontal Crashes. Report No. NTSB/SS-86/03. Springfield, VA: National Technical Information Service, 1986.

Call for Abstracts on Older Women's Health

Educators, researchers and clinicians are invited to submit abstracts of papers or presentations for a conference exploring the lives and health concerns of women. The conference will address lifestyle issues of mid-life and older women, age 40 and older, including health problems, health maintenance, and wellness promotion.

Audience: Nurse Practitioners, Nurse Midwives, Clinical Specialists and interested others
Location: New York City
Date: October 27–28, 1988

Interested participants should submit one-page, typed abstracts, along with personal curriculum vitae or biographical data, no later than May 6, 1988. Abstracts should describe research, assessment and/or clinical management, self-care strategies, alternative or non-traditional approaches; innovative view points, practices and programs. Indicate whether general session or workshop preferred. Send abstracts or inquiries to: Kathleen P. Wade, RNC, MA, Women's Health Care Nurse Practitioner Program, Margaret Sanger Center, 380 Second Avenue, 5th floor, New York, NY 10010. Tel: 212/777-2002.

TESTIMONY

BEFORE THE UNITED STATES SENATE
SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE OF THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

by

ROBERT "CHIP" FORD

Chairman, FREEDOM FIRST
PO Box 371, Swampscott, Massachusetts 01907
(617) 596-2517

October 17, 1989

S-1007

> *"They that can give up essential liberty to obtain a little temporary safety, deserve neither liberty nor safety."*
> Benjamin Franklin

In July of 1984, the U.S. Department of Transportation ordered that all new 1990 model cars must be equipped with automatic restraints unless two-thirds of the nation's population was covered by state laws requiring seat belt use by 1989. The auto industry immediately formed a multi-million dollar lobby group, Traffic Safety Now (TSN), and began its march from state capital to state capital extolling the virtues of Mandatory Seat Belt Laws, lobbying for favorable legislation in order to avoid the federally imposed requirement.

Thus was born the Mandatory Seat Belt Law controversy, which, tens of millions of dollars, countless man-hours, and five years later, continues to beleaguer and divide the American people to this day. Despite the April, 1989 D.O.T. deadline, despite the federal requirement for automatic restraints, this controversy refuses to subside. Hard-fought decisions by the states apparently will not be heeded and now comes an attempt to change the rules at this late date. The outcome was not the "right" outcome some feel, so it is time to bring more pressure to bear in order to achieve their goal, at any cost.

Initially, TSN and other proponent-lobbies met with little resistance, for who among us is not in favor of increased highway safety, or is not tempted by the appeal of fewer highway fatalities? With virtually no organized opposition and an unlimited campaign warchest, proponents were able to convince most states to adopt one kind of Mandatory Seat Belt Law or another with the promise and hope of public acceptance, high compliance, and exceptional results.

These promises and hopes have never been forthcoming.

While token opposition against these laws arose in most states during the controversy, organized resistance of any magnitude did not appear until Mandatory Seat Belt Laws were passed in Massachusetts and Nebraska, two widely diverse states, politically, economically, and geographically, states which provide for citizen-initiated repeal referenda; direct ballot access brought about by the citizens. In 1986, the Mandatory Seat Belt Law met with its first serious set-back when each state successfully repealed its law by popular vote in hotly contested campaigns.

Since that date, Oregon has defeated its law by popular vote in 1988, while Montana has maintained it (classic American democracy at its finest), and the question will be offered through a repeal referendum during a special election in North Dakota in December.

Grassroots, citizen-efforts in virtually every state to consider or adopt similiar legislation have had, and continue to have, exceptional impact despite modest funding against multi-millions of dollars provided by the auto industry lobby to impose and retain this legislation. In the Massachusetts campaign, opponents were outspent by $665,000-$9,500 yet defeated the law; in the Nebraska campaign, opponents were outspent by $406,000-$2,560 yet defeated the law; in the Oregon campaign, opponents were outspent by $787,000-$2,200 yet defeated the law. In the Wisconsin effort to repeal the law, TSN has contributed $627,449 between 1985-88, yet the *Freedom First in Wisconsin /Seat Belt Freedom of Choice* opposition continues unabated and, this year, managed to convince the legislature to reduce the fine and put the question before the voters in a 1990 referendum question.

North Carolina has no referendum provision, but *North Carolinians for Seat Belt Choice* have collected over 500,000 signatures for repeal of their law. With no referendum provision in Iowa, *Freedom First in Iowa* nonetheless has collected over 400,000 signatures for repeal of their state law. Many state legislatures and governors have rejected in its entirety or vetoed the concept as an infringement of individual liberty, and in no state has there been any sort of grassroots groundswell in support or promotion of a Mandatory Seat Belt Law. An attempt to collect sufficient signatures to again put the question before the voters in Nebraska in fact failed.

Noncompliance under threat of law is the greatest determinate of public resistance and disapproval, and provides the best indicator of acceptability by the American people. This truly "popular vote" clearly establishes that any Mandatory Seat Belt Law is unacceptable to the majority of Americans, when average compliance in states with Mandatory Seat Belt Laws across the country only reaches 47 percent. Very few elections are won in this country with less than a majority vote!

In the 1987 University of North Carolina study (commissioned by TSN), only nine states and the District of Columbia attained over 50 percent compliance (51 percent in Washington-66 percent in Maryland); while 15 states failed to attain more than 50 percent (22 percent in Utah-50 percent in New Mexico). This constituted an overall national average in states which had adopted Mandatory Seat Belt Laws of 47 percent compliance. (During the 1986 Massachusetts Mandatory Seat Belt Law experiment a compliance of 37 percent was attained, which reportedly has dropped to 24 percent today; 6 percent higher than pre-law compliance figures.)

MANDATORY SEAT BELT LAW STATE COMPLIANCE

(from the University of North Carolina study released on Dec. 14, 1987)

51%+

Connecticut (56%)*
Washington, DC (55%)
Florida (60%)
Hawaaii (64%)*
Indiana (52%)
Iowa (63%)*
Maryland (66%)
North Carolina (64%)*
Texas (60%)*
Washington (51%)

-51%

California (47%)
Idaho (27%)
Illinois (47%)*
Kansas (44%)
Louisiana (35%)
Michigan (47%)
Minnesota (32%)*
Missouri (40%)
New Jersey (35%)
New Mexico (50%)*
New York (48%)*
Ohio (41%)
Oklahoma (35%)
Tennessee (26%)
Utah (22%)

* *Primary Enforcement*

NATIONAL AVERAGE COMPLIANCE WITH MANDATORY SEAT BELT LAWS: 47%

Undoubtedly, given sufficient threat of penalty and punishment, people can be forced to comply with anything, any law, but is that the end to which we strive in these United States? Even assuming that the situation to which we address ourselves is of such import as to warrant draconian measures, will they provide the desired and anticipated effect?

Not according to the 1987 University of North Carolina study. While Texas reached a 60 percent compliance rate through the issuance of 513 tickets (per 100,000 population) to achieve a highway fatality reduction of -18.6 percent, North Carolina reached 64 percent compliance (4 percent higher than Texas) by issuing 542 tickets (per 100,000 population) (29 more than Texas) as it watched its highway fatalities *increase* by 8.8 percent (27.4 percent greater than Texas). There seems to be little correlation between compliance, threat of penalty, and highway fatalities, as this example clearly demonstrates.

Even more interesting is the effect on highway safety and fatalities before, during, and after Mandatory Seat Belt Law experimentation. The November-December, 1987 issue of Traffic Safety (National Safety Council) reported for the first six-month periods that Massachusetts reported 287 highway fatalities in 1985 (prior to the law), 324 in 1986 (during the law), and 287 in 1987 (following repeal); Nebraska reported 108 highway fatalities in 1986 (prior to the law), 137 in 1986 (during the law), and 125 in 1987 (following repeal). Highway fatalities in Oregon have declined by 9 percent since the 1988 defeat of its law. In the first two examples, which provide the only circumstances in which the law was imposed, took effect, and was subsequently repealed, highway fatalities actually *increased* under the law and *decreased* following repeal.

The August 13, 1987 Associated Press report (Dateline: Boston, MA) stated:

"Traffic deaths in Massachusetts dropped 19.5 percent in the first seven months of the year to mark the lowest death toll in four years, state officials said Wednesday.

"The drop in highway deaths comes despite the November repeal of the state's mandatory seat belt law. Proponents of the law had argued the law was needed because it would reduce highway deaths, which had been increasing."

Conversely, on October 18, 1987, the Associated Press report (Dateline: Ames, IA) stated:

"Highway deaths in Iowa were down in September but the total for the year remains above the 1986 level, Iowa Department of Transportation reported.

"For the first nine months of the year, 358 people died in Iowa traffic accidents, up 22 from the same period a year earlier."

This occurred during the first year of the Iowa Mandatory Seat Belt Law.

At first glance these results are difficult to comprehend, but when the theory of Risk Compensation is introduced, a possible explanation begins to appear. In his book, Risk and Freedom[1], Dr. John G. U. Adams, University College London, offers a convincing argument which addresses this seeming contradiction. After studying the effects of mandatory seat belt and motorcycle helmet laws in Great Britain and other countries, Dr. Adams asserts that imposed safety, while solving one specific problem, transfers elements of risk to other areas. He found that, in Great Britain, when a mandatory seat belt law was imposed, the number of deaths of motorists, especially drivers, declined, but the surprising side effect was an increase in deaths to rear-seat passengers, pedestrians, and bicyclists (See What If Everything We Know About Highway Safety Is Wrong? by John Semmens and Dianne Kresich, Pgs. 14-15, Enclosure # 1).

The jury is still out concerning the efficacy of seat belt use. There never have been, nor ever will be, any ironclad guarantees issued with Mandatory Seat Belt Laws. For every situation where a seat belt has saved a life there is a report of a seat belt causing an otherwise avoidable death, or the conviction that wearing a seat belt would have led to an otherwise avoidable death. If, and until, such a guarantee can be convincingly asserted, this decision must remain with the individual assuming this most personal risk.

Personally, I choose to use a seat belt. Overall, I believe my odds of surviving in a majority of accident situations are enhanced through its use. That is a most subjective and personal decision, for ultimately it quite possibly may determine the difference between my life or death. In a free society, I firmly believe only I have the right to make that decision. As long as that decision is mine, I have only myself to hold accountable, regardless of the results of my decision.

For the individual who, in good conscience, decides differently, but is forced under penalty of law to use a seat belt against his will, and consequently is killed or further injured as a direct result of complying with a personally distasteful law, a dilemma is posed. Who will assume responsibility for this decision, for the death or increased extent of injury? Will it be left to the state governor or legislature to send their condolences, will the U.S. Senate then reconsider its decision if this bill passes, or will the unfortunate and reluctant individual become simply a tragic statistic in the search for a "collective good"? Where will the responsibility lay? Who intends to assume it?

While the decision is mine to make, I have no one to blame if my judgement is in error: I assume the risk and the responsibility. When the decision *not* to use a seat belt is freely made, the individual so deciding also has nobody to hold responsible for the results but him or herself. When that decision is removed from the individual and transferred to some "higher authority," should not that authority be held accountable for any and all results of the decision?

This is not an issue of collective safety, such as is the case with traffic lights, stop signs, speed limits, or marked highway lanes, in which the safety of others may come in conflict with individual liberty and choice. It is an issue of personal safety; of whether one needs to be protected from one's self. It is an issue of government intervention in the most private of individual rights and decision-making—in matters of life and death without threat to society at-large or to any other single individual with reasonable expectations of safety.

Of course, proponents of mandated safety will always raise the argument that seat belt use in fact does affect society as a whole by increasing the financial burden to the taxpayer. Overlooking all the other areas in which taxpayers are required to assume financial responsibility for their fellow citizens *(and such absurdities as subsidization of a tobacco industry the products of which lead to some 350,000 directly attributable annual deaths, as opposed to the 46,000 deaths annually attributed to highway fatalities)*, this argument remains specious at best.

In the 1988, Highway Loss Data Institute Special Report[2], a study was performed on the impact of mandatory seat belt laws on motor vehicle injury claims in states with a law in effect. It concluded:

"Although there is evidence from several studies that state seat belt laws have reduced the frequency of serious and fatal injuries by about 5-10 percent, **the present study found no clear cut evidence of comparable reductions in personal injury coverage claims in the recent model cars**.

"Post-law injury claim frequencies were generally lower than pre-law results in Michigan, Connecticut, and New Jersey. **Post-law injury claim frequencies were either comparable to, or greater than, pre-law injury claim frequencies in New York, Texas, Florida, Kansas, and Maryland.**

"The small decreases followed by large increases in the post-law claim frequencies for Texas are surprising in light of the high belt usage patterns observed in that state.

"In almost all cases, the post-law percentages of collision claims with injury claims for Florida increased relative to pre-law values.

"The post-law percentages of collision claims with associated injury claims were generally quite a bit greater than those for pre-law period in Kansas.

"Regardless of the size of the collision claim, for injury claims greater than $250, $500, and $1,000 this percentage increased in the post-law period [Maryland].

"Despite increased use of seat belts following adoption of state seat belt use laws and the known injury reduction benefits of seat belt use, **no clear cut pattern of reduction in no fault injury claims was found**. It is well established that using seat belts substantially reduces the likelihood of death and serious injury in a crash, and seat belt use has increased since passage of state seat belt laws; thus, **these results are disappointing**.

"Although there is convincing evidence now from several studies on the overall benefits of state seat belt use laws in reducing the expected frequency of serious and fatal injuries, **the present study found no unambiguous evidence that such laws have had an impact on personal injury protection claims among occupants of recent model year vehicles**."

This well explains the vehement opposition which confronted me before the Massachusetts legislature in 1987, when I proposed my *"Buckle-Up Bonus"* (See Enclosures # 2-5). H-4563 would have provided financial incentive for voluntary seat belt use through insurance premium discounts for any driver involved in an accident in which the driver and all passengers were found to be using seat belts. During my testimony, I stated, "The stick approach was tried and failed. I hope the committee will see the benefit of this proposal and will provide for the carrot approach." Despite the support and favorable testimony my bill received from the *Massachusetts Seat Belt Coalition*, the *Alliance of American Insurers*, the *Independent Insurance Agents of New England*, and the *American Insurance Association* succeeded in blocking its passage.

So, our preconceived assumptions concerning the efficacy of Mandatory Seat Belt Laws are, once again, shattered. They often are in effect as highway fatalities increase, highway fatalities have declined after repeal of existing laws, *and the insurance industry's own reports indicate that injury claims more often than not either remain the same or increase*. No ironclad guarantees are anywhere to be found in either fatality or injury reduction in highway crashes. The "balancing test" between individual rights and police powers and the right of society to be protected becomes more unbalanced toward individual rights upon close scrutiny.

Since the 1984 D.O.T. decree, the states have been forced to confront the Mandatory Seat Belt Law issue, spurred on by auto industry special interests and influences, and promises and hopes of achieving greater highway safety through mandatory use legislation. State by state, on local levels, each state has had to wrestle with and accept the consequences and fallout of its decision. Some states have adopted Mandatory Seat Belt Laws with varying degrees of success. Some have adopted laws only to have them overturned by the will of the people. Some have outright rejected the concept. Five years ago, the Federal Government, through the U.S. D.O.T., felt the individual states capable of making decisions of their own. Through the auspices of D.O.T., the auto manufacturers were provided a means to avoid installation of automatic restraints in exchange for their costly promotion of Mandatory Seat Belt Laws, and the manufacturers spared no expense. Where the ability was available, the people in most cases expressed their collective will and opposed or defeated legislation they recognized as an infringement of liberty; in other cases they accepted and affirmed the legislation. For over half a decade now, the debate has been waged and decisions have been, and are still being, reached, without any further intervention from the Federal level.

Apparently, the "right" answer has not been chosen consistently or swiftly enough for some, for now that the Federally imposed deadline of April, 1989 has been reached and passed the rules are being assaulted in an attempt to have them changed. The outcome was not the desired one for them, unexpected resistance was met, so more force must be wielded to have their way, in the form of financial blackmail; in the form of withheld Federal Highway Funds.

The stick didn't work last time...so use a bigger stick!

Regardless of the outcome of this legislation before the committee, the issue will remain within each state's purview ultimately to decide. Those adamantly opposed to Mandatory Seat Belt Laws will continue to organize and strive to prevent and overturn them. Those dedicated to making personal safety decisions for others, those who feel they "know better," well-intentioned or otherwise, will continue their crusade to save us from ourselves...assuming the auto industry finds it in its best interests to continue with its past commitment to fund their activities, for without the continued influx of their millions upon millions of dollars there will be little effort and less success.

The stated goal of this bill, a compliance rate of 50 per centum by the second year and 70 per centum by the third, has been proven by experience to be optimistic at best; quite possibly unrealistic in practical application. Only through intense enforcement and extremely draconian punishment will these targets be universally attained, if such attainment is in fact conceivable. This would leave even states now in compliance with Mandatory Seat Belt and Motorcycle Helmet Laws at risk of diminished Federal Highway Funds, thus threatened with roads and highways in the state of ever-increasing deterioration until compliance can, if ever, be reached to the satisfaction of the Federal Government.

Seat belts, Mandatory Seat Belt Laws, motorcycle helmets and Mandatory Helmet Laws do not, by any means, prevent accidents. They are at best effective only after an accident has occurred. (In a perfect world, if accidents did not occur, this issue would be irrelevant.) True, effective highway safety must focus primarily on accident prevention and reduction, and these altruistic goals are only exacerbated as road and highway conditions are allowed, or forced, to deteriorate. The more unsafe a roadway becomes, the more it invites human error and mechanical failure. Any withholding of highway funds can be construed as an ad-hoc commitment against even the current, constantly improving, level of highway safety.

The 55-65 MPH Speed Limit controversy demonstrated the difficulties inherent in creating one law for fifty states with varying topographical, geographical and political exigencies. During the energy crisis, the argument was made that, in the name of national security and the nation's best interest, it was necessary to decrease the speed limits to conserve fuel. When the necessity was perceived to have been removed, when oil became more available and motor vehicles became more fuel-efficient and better designed, motorists began to rebel against the perceived artificial speed limit. After Congress amended the law to increase the limits, states such as Nevada and New Mexico raced to increase their speed limits based simply upon regional and political necessity. Other states, such as Massachusetts, have maintained their speed limits at 55 MPH for the same concerns. Nonetheless, a law which is more often observed in the breach is not only a bad law, but contributes to a subtle increase in disregard and disrespect for other laws as well.

Massachusetts provides a clear example of drivers' reactions to laws which they feel to be capricious. Although the maximum posted speed limit in the state has been retained at 55 MPH, anyone traveling at that rate of speed is overwhelmed by the enormous number of vehicles flying past at 65-70 MPH...despite heavy enforcement and the highest speeding fines in the country. Even if another Mandatory Seat Belt Law was to be adopted, where is the evidence to indicate it would be observed without even greater, more draconian, penalties?

If actions, compliance with a law, could be considered votes, the Massachusetts speed limit would be raised. If actions, compliance with a law, could be considered votes, a national Mandatory

Seat Belt Law also will fail, based upon past performances in most states.

If Congress is seeking a sure-fire deficit reduction plan by cutting Federal Highway Funds, it need only vote to pass this bill.

If this committee is concerned with increased highway safety and the reduction of motor vehicle deaths and injuries, I would respectfully suggest that it focus it's attention on improved road and highway engineering and construction, better engineered and constructed motor vehicles, and increased driver education. Today, highway infrastructures across the nation are at-risk and require both increased maintenance and general upgrading. Failing that, we can confidently anticipate increases in accidents, thus deaths and injuries, regardless of whether seat belts or motorcycle helmets ever become universally accepted. A threat to withhold necessary and appropriate Federal Highway Funds for any reason whatsoever not only sends the wrong signal, but is not a practical, effective, or convincing method to increase highway safety.

If this committee is concerned with increased seat belt and motorcycle helmet use, education and incentives ought to be strongly considered on a large scale. In a free society, desired changes are not brought about through coercion and force, but through education, incentives and example. One only need look to the application of these approaches in campaigns to change social mores where the goals have been a reduction in the consumption of tobacco and alcohol products to appreciate their effectiveness.

Political realities, actual compliance, fatality rates, injury statistics: Where is the justification to continue a controversy that, for all intent, was left to the states to decide over half a decade ago? Where is the justification to control the means of individual safety choices where there are no ironclad guarantees of the effects of that imposition; no victim but the individual? If "the financial burden to society" is to be considered as the paramount concern, where will the line be drawn, for each of us daily assumes certain risks which , potentially, could contribute to that pervasive burden?

I hope this committee will carefully consider these questions in light of the preceding testimony, and will vote against S-1007.

> *"Experience should teach us to be most on our guard to protect liberty when the government's purposes are beneficial. Men born of freedom are naturally alert to repel invasion of their liberty by evil-minded rulers. The greater dangers to liberty lurk in insidious encroachment by men of zeal, well-meaning but without understanding."*
>
> Justice Louis Brandeis
> Olmstead v. United States
> 277 U.S. 479 (1928)

REFERENCES

[1] Risk and Freedom, by Dr. John G. U. Adams, University College London, 1985, Transport Publishing Projects

[2] Highway Loss Data Institute Insurance Special Report, Insurance Injury Loss Experience in Eight States with Seat Belt Laws, 1983-86 Models., HLDI A-28; July, 1988, by the Highway Loss Data Institute, Watergate Six Hundred, Washington, DC 20037

Enclosures:

1. What If Everything We Know About Highway Safety Is Wrong?, by John Semmens, Senior Policy Analyst, Arizona Dept. of Transportation, 206 S. 17th Ave., Rm. 330B, Phoenix, AZ 85007, and Dianne Kresich, Transportation Analyst, City of Mesa, 320 E. 6th St., Mesa, AZ 85201; A Paper Accepted for Presentation at the Transportation Research Forum's 28th Annual Meeting, Nov. 16-18, 1987, San Antonio, TX

2. H-4563: An Act Relative to a Reduction of Motor Vehicle Insurance Premiums for the Wearing of Seat Belts

3. S-650: An Act Requiring Reduction of Insurance Premiums for Businesses Adopting Employee Safety Belt Programs

4. The Patriot Ledger, Thurs., Mar. 19, 1987: 'Buckle-up bonus' proposed for people using seat belts

5. The Sun, Lowell, Mass., Thurs. Mar. 19, 1987: Commissioner, insurers urge defeat of 'seat belt discount'

Enclosure 1

WHAT IF EVERYTHING WE KNOW ABOUT HIGHWAY SAFETY IS WRONG?

A Paper Accepted for Presentation at the
Transportation Research Forum's 28th Annual Meeting,
November 16-18, 1987, San Antonio, Texas

By

JOHN SEMMENS
SENIOR POLICY ANALYST
ARIZONA DEPARTMENT OF TRANSPORTATION
206 S. 17TH AVENUE, ROOM 330B
PHOENIX, ARIZONA 85007
PHONE: (602) 255-8243

and

DIANNE KRESICH
TRANSPORTATION ANALYST
CITY OF MESA
320 E. 6TH STREET
MESA, ARIZONA 85201
PHONE: (890-3557)

NOTE: The views expressed in this paper are those of the authors and do not necessarily reflect Official Policy.

WHAT IF EVERYTHING WE KNOW ABOUT HIGHWAY SAFETY IS WRONG

by John Semmens and Dianne Kresich

Safe is preferable to dangerous. This is one of those choices for which we easily find universal concurrence. No one would seriously argue on behalf of increasing peril on our roadways. Merely being in favor of safety, though, does not answer the very pertinent question of how safer roads are to be obtained. From an engineering standpoint we could try to improve the road itself, the vehicle using the road, or the driver operating the vehicle. All three approaches have been employed in the attempt to lessen the danger. How effective have the safety measures promoted by public policy been?

While many appear to be satisfied that the assorted safety mandates promulgated by various levels of government are, indeed, making roads safer, the fact is we simply do not know whether public policy is helping or hurting the effort to enhance safety. How can this be? Doesn't logic tell us that installing traffic signals should reduce collisions, that wearing seat belts saves lives, and that driver education improves operator skill? As long as we deal with an abstract conception of an environment in which nothing else but the safety-enhancing improvement changes, logic would seem to dictate an obvious conclusion: intervention increases safety. However, the reality is that there is a complex interaction between safety-enhancement measures and human behavior that makes simplistic extrapolation from intent to results prone to err. As some of the data we shall review show, actions intended to improve safety may not have the desired effects.

That intended safety improvements might fail is not to be interpreted as an indictment of the good motives of those who have designed or promoted such measures. Likewise, neither should the questioning of the effects of various safety mandates be judged a neanderthal opposition to progress. The issue is whether chosen means to a desired end (safer roads) are suitable and cost-effective. Even though we may agree that it is difficult, if not impossible, to place a value on a human life, the issue of cost is still relevant. Resources available for meeting human needs are limited. Those expended on ineffective safety programs are not available for more urgently needed purposes. So, the notion that any money spent on safety is warranted because "no price is too high to pay for saving a life" ignores the very real opportunity cost entailed in any employment of scarce resources.

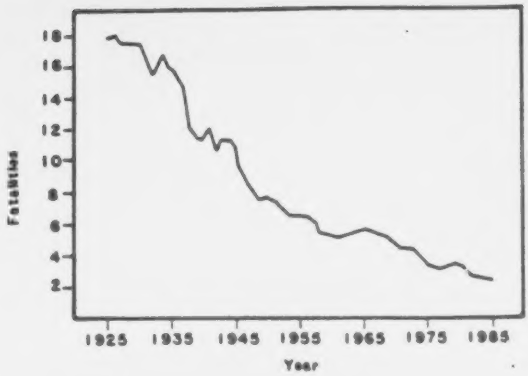
Over a decade ago, economist Sam Peltzman authored an article questioning the efficacy of mandatory safety improvements to vehicles (Peltzman 1975). His suggestion that regulations meant to improve safety might be useless or, worse, counterproductive shocked the safety establishment. His methodology was attacked on the grounds that is failed to prove that the criticized safety rules didn't work. Since his methodology was an examination of accident statistics in the post-safety regulation period, there never was any prospect for proving the inefficacy of the regulations. At the same time, though, the proponents of mandatory safety rules have little to offer other than similarly derived statistics in support of their case. They, too, have failed to prove that the safety measures are effective.

It may be that it will never be possible to conclusively prove whether specific safety measures do or don't work. Perhaps the best we can hope for is to weigh conflicting evidence and decide what we want to believe about the advisability of mandating specific safety regulations. It is the purpose of this paper to observe some of the evidence contradicting the conventional wisdom on safety. After all, none of the promotional efforts on behalf of any mandatory safety rules shows any awareness of conflicting evidence. Many of those making decisions on safety legislation or on how to expend highway resources have not been exposed to evidence that the rules or measures they contemplate may be ineffective. It is hoped that by creating some exposure and provoking a more robust debate on safety issues, better and more productive outcomes will result.

Long Term Aggregate Trends

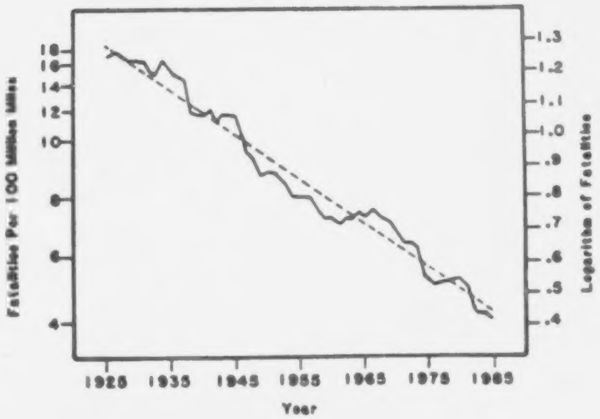
The long term decline in traffic fatalities per vehicle mile of travel has been a source of pride for many safety advocates. The plunge from 18 fatalities per 100 million vehicle miles in 1925 to a current figure around 3 fatalities per 100 million miles (see table 1) would appear to reflect a successful safety program. That is, at first glance and without much thought it

U.S. Fatalities Per 100 Million Miles



Sources:
Statistical Abstract of the United States
Historical Statistics of the United States

U.S. Fatalities On Logarithmic Scale



Sources:
Statistical Abstract of the United States
Historical Statistics of the United States

would seem to be evidence of successful regulation. However, the inexorable progress of the decline raises some doubt as to whether specific safety measures could really be the significant factors. The absence of any substantial deviations from the long term trend could be taken as indicative of the lack of consequence of specific safety measures.

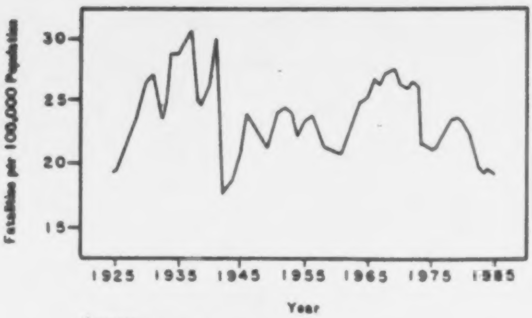
If we convert the long term data to a logarithmic scale (see table 2) we cannot help but note that the trend fluctuates around a straight line. This line approximates a constant 3% per year decline in fatalities per vehicle mile of travel. If legislated safety measures had had a significant impact on traffic fatalities, wouldn't we expect to see dramatic changes in the rate of decline? While the absence of dramatic changes in the rate of decline in traffic fatalities doesn't prove that legislated safety has no impact, neither does the long term decline prove that legislated safety is the cause of the salutary trend.

Similar long term declining trends in fatalities per vehicle mile of travel have been observed in other parts of the world. In general, there appears to be an inverse relationship between degree of motorization and fatality rates. As societies become more motorized, the fatality rates decline. This phenomenon has been dubbed "Smeed's Law" (Adams 1985). Interestingly, the phenomenon cuts across time and cultural differences such that modern, safety-equipped cars in relatively unmotorized third World nations achieve fatality rates comparable to those in the United States when Model T Fords were the dominant vehicle (Adams 1987). Perhaps the long term decline in fatalities per mile would have occurred regardless of whether government mandated specific safety measures. If this is the case, then billions of dollars have been expended on devices that have had no significant effect on safety.

A further examination of long term traffic fatality statistics produces some interesting information. One of Peltzman's contentions was that drivers might choose to consume intended safety benefits in other forms (Peltzman 1975). For example, improved crashworthiness might induce many drivers to opt for more speed rather than more safety at previous speeds. Another possibility is that the perception of improved safety would contribute to a greater propensity to travel. That factors such as these might be at work can be observed from the long term data on traffic fatalities per capita (see table 3). Unlike the fatalities per vehicle mile data, there is no long term salutary trend. The 1985 death rate of 19 per 100,000 persons is right back where it was in 1925. The up and down fluctuations give no hint of assurance that the future will produce improved safety.

If traffic death rates have shown no improvement over several generations we are inevitably led to the question of whether all the effort and expense on behalf of specific safety measures was worth it. That people are traveling further and faster is a value in itself. However, the appeal that "if even one life is saved, the effort is worthwhile," doesn't have the same impact when actual human behavior effectively converts it to "if even one more mile is traveled..." Further, when we consider that there are threats to life and limb other than traffic

Motor Vehicle Fatality Rate



Source:
Statistical Abstract of the United States
Historical Statistics of the United States

hazards, it is entirely possible that funds expent on safety measures with negligible impact may lower overall safety. Consider that death by homicide has more that doubled over the last generation. Given this decidedly unsalutary trend, can we be confident that diverting police resources to the writing of citations for motorists not wearing seat belts, for example, will actually improve the net safety of the environment?

Ambiguous Evidence

While there are certain propositions about which there can be little argument -- for example the damage done by collisions at high speeds is greater than at low speeds -- this knowledge does not lead directly to feasible safety strategies in the real world. Obviously, the number and severity of collisions could be reduced to nil by prohibiting movement. However, we prefer the values to be achieved, albeit at some higher levels of risk, from movement. Safety is not, then, an all-consuming objective. We purposefully choose less safety in order to pursue other ends. The debate that exists cannot be couched in simplistic safe vs. unsafe terms, despite emotional rhetoric (i.e., "unsafe at any speed") that may be employed. There are trade-offs of safety vs. other objectives. Improvements that can be made are more properly considered as gains at the margin.

Most practical approaches to the safety issue aim at limiting or reducing negative consequences rather than imagining that risk is going to be eliminated. Even with this more realistic perspective, the directional effect of any measure intended to enhance safety is not as certain as many advocates of these measures might like to believe. Below we survey some of the research on the impacts of various programs intended as safety improvements. It is by no means clear that the intent is realized in practice.

The issue of drunken driving is a major concern in traffic safety. Enforcement personnel estimate that up to 50% of the fatal accidents on our highways involve an intoxicated driver. Coming up with methods of reducing this hazard could contribute to significant improvements in road safety. A currently popular proposal along these lines entails the restriction of packaged liquor sales. Specifically, many communities are banning the simultaneous vending of gasoline and packaged alcoholic beverages. The intent is that it will be more difficult for persons to both drink and drive. Recent evidence indicates that contrary to intent, the actual effect of banning the sale of alcoholic drink at gas stations may be to increase drunken driving. In a study of 400 California communities, economists Patrick McCarthy and John Umbeck of Purdue University found that cities with the bans experienced increases in alcohol-related accidents ("Driven . . ." 1987).

While the ban does make it more inconvenient to obtain alcoholic beverages, it is not deterring determined drinkers. Some are going the extra mile to find liquor stores where they can buy their beverages. Others are settling for consuming their liquor at bars rather than transporting the packaged goods home for consumption. In the first instance, the policy is inducing intoxicated drivers to put in more miles of travel on the roads. In the second instance, an individual who previously got drunk in the privacy of his own home now becomes inebriated in a public place from which he has to drive home. In either case, the intended safety benefit from the regulation may be more than negated by the behavioral response of road users.

Securing traffic signals and painted crosswalks are favorite aims of neighborhood groups concerned about safety. Typically, the injury or death of a child moves people to demand action to enhance safety by installing lights, or painted crosswalks, or both. And we have all seen the public service announcements on television encouraging people to "cross at the green and not in-between." Obviously, signals and crosswalks must improve safety. Statistics, though, indicate otherwise. A study of intersections in Milwaukee failed to demonstrate any improvement in safety from the installation of traffic lights. In the three-year period prior to signalization, the intersections studied experienced 520 accidents. In the three years after signalization, there were 522 recorded accidents. Injuries sustained in the two periods were 134 and 154, respectively. Right angle collisions were down by 34%, but rear-end, head-on, and vehicle-bicycle collisions were up by 37% to 41% (Short et al. 1982).

The statistics on painted crosswalks are even more disconcerting. There are six times as many accidents in marked crosswalks than in unmarked areas. Of course, crossing pedestrian volume is higher for marked crosswalks, but even after adjusting for this fact we find that the rate of accidents is still twice as high for painted crosswalks (Herms). Some pedestrians place too much confidence in the power of paint to induce drivers to stop. Perhaps we have oversold the idea that crosswalks are safe places. Thus, even though the law holds the driver responsible for stopping, the installation of marked crosswalks is not having the fully intended effect of reducing vehicle-pedestrian collisions.

If we are convinced that driver attitude is a major factor affecting the accident rate, the natural course would seem to call for improved training. Better driver knowledge and skill ought to be an unassailable aid to safer roads. Even here, though, the evidence is mixed. Insurance companies give premium reductions to drivers who have had driver education courses (Cushman 1986). Since these firms are in business to make money, they have a strong incentive to accurately assess risk. Consequently, it would appear well established that mandating driver education for high school students should enhance safety. How, then, do we explain the results of a Connecticut study (Robertson 1981) that showed the elimination of mandatory driver education classes was followed by lower accident rates for students of those schools? While it is likely that on an individual basis driver education improves safety, on an aggregate basis this may not be the case. Forcing students to take driver education courses may encourage earlier driving by those who would otherwise delay this undertaking. As a result, the streets could be made more dangerous by hastening teenagers into operating motor vehicles.

Another example of how we can mislead ourselves with unquestioning devotion to safety dogma is in the case of the 55 mph speed limit. Public transportation agencies have sported signs with the familiar "55 saves lives" slogan. Many attribute the decline in fatalities per vehicle mile of travel since 1974 to the reduction in maximum speed limits from 70 or 75 mph to 55 mph. The mechanism by which the 55 mph speed limit is supposed to work may be simple in theory, but in practice it is very mysterious. It is not that we challenge the idea that vehicles crashing at higher speeds inflict greater damage. Rather, we challenge the notion that an unobserved limit can be expected to have a significant impact on road safety. Before the 55 mph limit was relaxed for rural Interstate highways, surveys revealed that over 70% of the vehicles traveled at speeds in excess of 55 mph (Mancuso 1986). Observation of highway speeds in Arizona showed an average rural Interstate speed of 68 mph in 1973, the year before limits were lowered to 55 mph. In 1986, these same routes showed an average speed of 66 mph, even though the posed limit was 55 mph (Miller 1987). How can the mere posting of signs be credited with saving lives if the speed limit is ignored? It would seem that the vehement defense of the 55 mph speed limit as a boost to safety is more an act of faith that a demonstrated reality.

Perhaps the biggest current controversy in auto safety is the issue of mandatory seat belt use laws. A combination of factors has brought the focus of occupant restraint to compulsory belt wearing. Seat belts themselves became standard equipment for cars back in the 1960s. Thus, purchasers of new autos were compelled to pay for the addition of seat belts to vehicles. However, only a minority of drivers actually use the belts in their cars. The "flaw" in this safety equipment is that it requires action on the part of the user to be effective. The failure of users to regularly take action to save their lives spawned the campaign for passive restraints: those that could be effective even if the driver neglects to take the precaution of fastening his own seat belt. The mandated mechanism for achieving passive restraint is the so-called "air bag": a device that deploys automatically when the vehicle crashes.

The problem with the "air bag" is that it protects only against a limited variety of crashes for only an initial impact and costs a considerable amount of money. Quite logically, the automobile manufactures would prefer a solution to the lack of seat belt use that does not add extra cost to their products. In order to give a lower cost option an opportunity, Secretary of Transportation Elizabeth Dole decreed that if states representing two-thirds of the population enacted mandatory belt use laws by April 1, 1989 vehicle manufacturers, would not be required to install "air bags" in all new cars. It is by no means clear that the alternative of enacting compulsory belt use laws will avert the cost of mandatory "air bags." Neither is it clear that the enactment of seat belt use laws will make highway travel safer.

Of course, the evidence is very persuasive that in any given crash vehicle occupants are more likely to survive if they are wearing seat belts. However, this does not prove that compulsory belt use laws will make the traffic environment safer. There are several ways in which the intended safety improvement can break down. First, mere enactment of a mandatory use law is not the equivalent of attaining higher rates of use. The experience with non-observance of the 55 mph speed limit is reminder enough of this possibility. Second, resources devoted to enforcement of mandatory belt use laws are not simultaneously available for other purposes. For example, the time and money used to apprehend, cite, prosecute, and punish those not wearing seat belts is not available for the apprehension, arrest, prosecution, and punishment of potentially more dangerous threats to public safety (for example, drunken driving). Third, the imposition of compulsory seat belt use may have some undesirable side-effects that detract from, or even outweigh, the saving of lives for vehicle occupants.

A study of the post-mandatory belt use law in Great Britain raises some disturbing implications. As expected, driver and-front-seat passenger fatalities were down by 18% and 25%, respectively, in the post-law period. At the same time, though, fatality rates for back-seat passengers, pedestrians, and cyclists were up by 27%, 8%, and 13%, respectively (Harvey and Durbin 1986). If one considers non-occupants killed only by those vehicles covered by the belt use law, we find pedestrian death rates up by 14% and cyclist deaths up by 40% (Hamer 1985 c).

There is some controversy over the above statistics. While statistics cannot prove the cause and effect relationship we might like to have in order to be certain, they can suggest possible cause and effect sequences. John Adams of University College in London has gained some notoriety by suggesting a link between mandatory belt use laws and increased risk to pedestrians and cyclists (Adams 1985). The instantaneous reaction may be to reject the idea that a driver would purposefully risk a crash merely because a seat belt gives him better protection. Yet, calm reflection tells us that the willingness to take greater risks is influenced by perceptions of enhanced safety: non-swimmers more willingly venture into water with life-jackets, high-wire acts are more daring when there is a safety net, firemen equipped with oxygen and asbestos suits venture into burning buildings, etc. In traffic safety terms, statistics have consistently shown higher crash rates for larger cars (Evans (a)). For its part, Great Britain's Department of Transportation predicted a potentially alarming increase in pedestrian deaths if mandatory seat belt use because law (Hamer 1985 c). Shamefully, though, this accurate prediction was officially suppressed until two years after the mandatory belt use law went into effect (Hamer 1985 a). We do not do the cause of better safety a service by refusing to contemplate inconvenient data or arguments. If forcing people to use seat belts is such a meritorious undertaking, it ought to be able to prevail over all contrary evidence and arguments.

Real Safety Enhancement

Most transportation practitioners are engineers. It stands to reason that an engineering approach to safety would predominate in highway agencies and in the advice transportation professionals give to those who legislate safety rules. Unfortunately, the engineering approach does not allow for offsetting human behavioral responses to intended safety improvements. All other things being held constant, the removal of a hazard or the provision of safety device ought to result in less danger. The problem is that in the real world, few things are held constant for very long. Human beings are one of the most dynamic elements in any prospective safety equation. We cannot expect to have any lasting or significant impacts on safety if we ignore the impacts of changes in human behavior in response to our intended safety improvements.

A dispassionate examination of the record in intended safety improvements cannot fail to convince us that we do not really know whether the wide array of measures taken have produced net gains. Even if we can be sure that a specific device, like a seat belt, makes vehicle occupants safer, this is not the same as making the roads safer. If all, or even part, of the result of mandatory safety rules is a mere shifting of the burden of risk, can we really justify the use of compulsion to achieve such mixed and/or questionable ends?

The current focus of most safety programs is too narrow. Better brakes, bumpers, or belts are the physical products of intended safety improvements. Even if the physical product is improved, though, there is no assurance that the environment is safer. It is not the means of a person's demise that is so crucial as the fact of his demise. Does it really matter that fewer people die as the result of brake failure, if in the end the traffic fatality toll is unchanged in total? That the traffic death rate per capita is the same today as it was six decades ago should inspire more restraint in our willingness to impose mandatory safety regulations on the traveling public. This should especially be the case when we presume to save people from the consequences of their own negligence.

The notion that there is no downside to public mandates aimed at increasing safety is a cruel self-deception. Everything has its cost. Over the last decade some $1.3 billion spent on intended safety improvements by the federal government produced "little demonstrated effect in reducing the traffic crash toll" according to the General Accounting Office ("GAO . . ." 1980). Perhaps this money could have been employed to better effect in some other manner. For example, while statistics do not show an improvement from government efforts in traffic safety, they do show a deteriorating trend in crimes of violence. A person's chance of being murdered has doubled since the 1960s. Resources that many states are now committing to enforcement of seat belt use laws are resources that could be devoted to better efforts to prevent crimes of a more serious nature.

So, the opportunity cost of mandating intended safety improvements has been an overlooked aspect in the overwhelming majority of safety promotional campaigns. This is all the more critical when it becomes apparent that the "obvious" safety improvements do not necessarily produce the intended results. It is one thing to tread on individual freedom armed with the rationale that the inflicted compulsion is for the individual's "own good." As the evidence shows, though, we cannot be sure that the safety rules government imposes are for the individual's own good. Less enthusiasm for coercion and more respect for individual autonomy would appear to be the scientifically warranted direction for those truly interested in enhancing safety to take.

References

Adams, John. Risk and Freedom. Cardiff, Great Britain: Transportation Publishing Projects, 1985.

Adams, John. "Risk Homeostasis and the Purpose of Safety Regulation." Presented to CEC Workshop on Risky Decision Making in Transport Operations, TNO Institute for Perception, Soesterberg, The Netherlands, November 9, 1986.

Adams, John. "Smeed's Law: Some Further Thoughts." Traffic Engineering & Control, February 1987.

Bedard, Patrick. "If We Really Want to Save Lives, Let's Make Dying Against the Law." Motor Trend, May 1984, p. 183.

Block, Walter. "Theories of Highway Safety." Unpublished manuscript, circa 1980.

Chaddar, Himmat Paul Schoufeld. "Are Pedestrians Safe at Right-Turn-on-Red Intersections?" Journal of Transportation Engineering, January 1985, pp. 1 - 15.

Cirillo, Julie and Forrest Council, "Highway Safety: Twenty Years Later." Transportation Research Record 1068, pp. 90 - 95.

Copulos, Milton, "The High Cost of the 55 MPH Speed Limit." Backgrounder, Heritage Foundation, September 9, 1986.

"Curfews Reduce Crashes of 16-Year-Olds." Status Report, Insurance Institute for Highway Safety, October 5, 1982, pp. 1 - 2.

Cushman, William. "Driver Education," Traffic Safety, May/June 1986, pp. 6 - 7, 25 - 27.

"Driven to Driving," Reason, July 1987, pp. 17 - 19.

Evans, Leonard. "Accident Involvment Rate and Car Size." Accident Analysis and Prevention, Vol. 16, pp. 387 - 401 (a).

Evans, Leonard. "Human Behavior Feedback and Traffic Safety." Human Factors, October 1985, pp. 555 - 576 (b).

Evans, Leonard. Estimating Fatality Reductions from Increased Safety Belt Use. General Motor Research Laboratories, May 21, 1986 (c).

Evans, Leonard, "Risk Homeostasis Theory and Traffic Accident Data." Risk Analysis, Vol. 6, No. 1, 1986, pp. 81 - 94 (d).

Evans, Leonard, and Paul Wasielewski. "Risky Driving Related to Driver and Vehicle Characteristics." Accident Analysis and Prevention, Vol. 15, No. 2, 1983, pp. 121 - 136.

Flint, Jerry. "Back to the Drawing Board." Regulation, September/October 1986, pp. 50 - 51.

"GAO Questions Effectiveness of Safety Grants," Status Report Insurance Institute for Highway Safety, November 21, 1980, pp. 1 - 2.

Graham, John. and Steven Garber, "Evaluating the Effects of Automobile Safety Regulation," Journal of Policy Analysis and Management, Vol. 3, No. 2, 1984, pp. 206 - 224.

Hamer, Mick, "Report Questions Whether Seat Belts Save Lives." New Scientist, February 7, 1985, p. 7 (a).

Hamer, Mick. "Belted Drivers Are Killing More Pedestrians." New Scientist, April 25, 1985, p. 8 (b).

Hamer, Mick. "Britain to Decide on Whether to Keep Seat Belts." New Scientist, December 19, 1985, p. 9 (c).

Harvey, A. C. and J. Durbin. "The Effects of Seat Belt Legislation on British Road Casualties." Royal Statistical Society, March 19, 1986.

Herms, B. F. "Pedestrian Crosswalk Study," Highway Research Record 406, pp. 1 - 13.

"Inflator Explosion." Status Report, Insurance Institute for Highway Safety, August 21, 1979, pp. 11 - 12.

"Influence of Truck Size and Weight on Highway Crashes." Status Report, Insurance Institute for Highway Safety, March, 1983.

Mancuso, James. "Finding the Truth About Highway Safety." Heartland Perspective, August 8, 1986.

McKenna, Frank. "Do Safety Measures Really Work?" Ergonomics, Vol. 28, No. 2, pp. 489 - 498.

McKenna, Frank. "The Human Factor in Driving Accidents." Ergonomics. Vol. 25, No. 10, pp. 867 - 877.

Miller, Charles. Director, Arizona Department of Transportation, "Comments to the House Public Works

Committee on the 55 MPH Issues," 1987.

"NHTSA Estimates Cost of Auto Safety Regulations." *Status Report*, Insurance Institute for Highway Safety, April 27, 1982, pp. 2 - 3.

"No Signs in the Window." *Today's Traffic*, November/December 1986, p. 5.

"Not All See 21 as a Cure-All." *Traffic Safety*, March/April 1986, pp. 8 - 9.

"Patterns of Teenager Crash Involvement are Studied." *Status Report*, Insurance Institute for Highway Safety, November 21, 1980, p. 3.

Peltzman, Sam. "The Effects of Automobile Safety Regulations." *Journal of Political Economy*, Vol. 83, No. 4, 1975, pp. 677 - 725.

Pisarski, Alan, "Deep-Six 55." *Reason*, November 1985, pp. 3 - 35.

Raub, Richard. "Removal of Roof-Mounted Emergency Lighting from Police Patrol Vehicles: An Evaluation." *Transportation Research Record 1047*, pp. 83 - 88.

Robertson, Leon. "Pattern of Teenaged Driver Involvement in Fatal Motor Vehicle Crashes." *Journal of Health Politics, Policy and Law*, Summer 1981, pp. 303 - 314.

Semmens, John and Dianne Kresich. "Coercion is No Cure for Collision," *Heartland Perspective*, January 26, 1987.

Short, Michael S., and Gerald A. Woelfl and Chia - Juch Chang. "Effects of Traffic Signal Installation on Accidents." *Accident Analysis and Prevention*, Vol. 14, No. 2, 1982, pp. 135 - 145.

Smith, Kevin. "Drop in Highway Deaths Mystifies Experts." *Car and Driver*, May 1984.

Summers, Brian. "Is It Safer to Put Uncle Sam at Wheel of Your Car?" *Orange County Register*, October 21, 1984.

Sussman, E. D. H. Bishop, B. Madnick and R. Walter. "Driver Inattention and Highway Safety." *Transportation Research Record 1047*, pp. 40 - 48.

Trucking Deregulation in 1986. U. S. Department of Transportation, 1986.

"Two Studies Cite Failure of Drunk-Driving Programs." *Status Report*, Insurance Institute for Highway Safety, April 9, 1979, pp. 7, 9.

"Wet Pavement Found to Multiply Fatal Crash Risks." Status Report, Insurance Institute for Highway Safety, May 20, 1980, p.4.

Wilde, Gerald. "Evidence Refuting the Theory of Risk Homeostasis?" Ergonomics, Vol. 27, No. 3 pp. 297 - 304.

Williams, Allan F., Paul L. Zador, Sandra S. Harris, and Ronald S. Karpf. The Effect of Raising the Legal Minimum Drinking Age on Fatal Crash Involvement. Insurance Institute for Highway Safety, June 1981.

Enclosure 2

HOUSE . . . . No. 4563

By Mr. Reinstein of Revere (by request), petition of Robert F. Ford relative to a reduction of motor vehicle insurance premiums for the wearing of seat belts. Insurance.

The Commonwealth of Massachusetts

In the Year One Thousand Nine Hundred and Eighty-Seven.

AN ACT RELATIVE TO A REDUCTION OF MOTOR VEHICLE INSURANCE PREMIUMS FOR THE WEARING OF SEAT BELTS.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

Section 113B of chapter 175 of the General Laws, as most recently amended by chapter 484 of the acts of 1986, is hereby further amended by inserting after the sixth paragraph the following paragraph: —

In so fixing and establishing classifications of risks under this section, the commissioner shall establish a seat belt safety plan. Such plan shall reflect a reduction of insurance premium to the owner of a motor vehicle based upon the wearing of seat belts during a motor vehicle accident, regardless of fault. Seat belts shall be worn by all of the passengers and the owner/operator of such motor vehicle to be eligible under such plan. The commissioner shall determine the required verification for such wearing of seat belts.

This Document Has Been Printed On 100% Recycled Paper.

Enclosure 3

SENATE . . . . No. 650

By Mr. Albano, a petition (accompanied by bill, Senate, No. 650) of Salvatore R. Albano and Suzanne M. Bump for legislation to require reduction of insurance premiums for businesses adopting employee safety belt programs. Insurance.

The Commonwealth of Massachusetts

In the Year One Thousand Nine Hundred and Eighty-Seven.

AN ACT REQUIRING REDUCTION OF INSURANCE PREMIUMS FOR BUSINESSES ADOPTING EMPLOYEE SAFETY BELT PROGRAMS.

Be it enacted by the Senate and House of Representatives in General Court assembled, and by the authority of the same, as follows:

Section 113 B of Chapter 175 of the General Laws is hereby amended by adding the following paragraph:

There shall be a ten percent reduction in annual automobile insurance premiums for companies doing business in Massachusetts which adopt and adhere to employee safety belt incentive programs pursuant to regulations promulgated by the Insurance Commissioner. The regulations shall be consistent with the 1984 federal guidelines in the Safety Belt Handbook for Employers prepared by the National Highway Traffic Safety Administration.

This Document Has Been Printed On 100% Recycled Paper.

Enclosure 4

6 The Patriot Ledger, Thurs., March 19, 1987

'Buckle-up bonus' proposed for people using seat belts

By John Diamond
Patriot Ledger State House Bureau

BOSTON — A leader of the successful fight to repeal the seat belt law has joined with his former adversaries to push for insurance breaks for drivers who buckle up.

Robert "Chip" Ford of Freedom First said the proposal, which he calls the "buckle-up bonus," would reverse the decline in the use of seat belts that followed repeal of the law last Nov. 4.

"This will still the complaints of those who regularly use seat belts and feel it unfair that they pay the same insurance premiums as those who don't," Ford said.

"The stick approach was tried and failed," said Ford. "I hope the committee will see the benefit of this proposal and will provide for the carrot approach."

At a State House hearing yesterday, legislators and a coalition of citizens groups advocated insurance breaks for people who wear seat belts and for companies that encourage their employees to use them. One proposal would provide a financial break to drivers who are involved in accidents while wearing their seat belts.

Ford's comments indicate how the debate over the incentives has reshuffled alliances on the seat belt issue. Insurance companies that had supported the seat belt law now oppose any financial incentives for wearing seat belts.

Opponents of the law support both the incentive and a bill requiring seat belts for passengers under age 16.

The Legislature's Insurance Committee is considering a measure that would reduce auto insurance premiums by 10 percent for companies that adopt safety belt incentive programs.

Rep. Suzanne Bump, D-Braintree, said the purpose of the original seat belt law was to "reduce serious injury in accidents."

She said an incentive program would provide a different means to the same end. Any program put in place by a company would have to conform to federal and state guidelines.

Inta Hall of Hingham, vice president of the Massachusetts Seat Belt Coalition, said the decline in seat belt use places the burden on individuals and their employers to push for safety behind the wheel. In many communities, she said, "we are back to ground zero in seat belt usage."

The cost savings for companies are already well documented, Hall said. She noted one case in which an engineer employed by a private company walked away from an accident because he was wearing seat belts. An employee involved in a similar accident, but not wearing a seat belt, missed 12 days of work, and the cost to the company was $7,294, she said.

"The time has come for the auto insurance industry to assist in managing the risks which, if left untended, costs insurance companies far more in the long run," she said. "The Bureau of Labor Statistics tells us that motor vehicle accidents, not heart attacks or falls, are the leading cause of job-related deaths in private industry."

But insurance companies yesterday said they want no part of seat belt incentive programs.

"Discounts here, discounts there, everybody wants a discount," said Thomas Whelton of the Alliance of American Insurers.

Whelton said there is no practical way to know whether someone is wearing a seat belt.

Just as policy holders sometimes lie about where their car is garaged to pay less auto insurance, so they might be tempted to lie about whether they were wearing their seat belt at the time of an accident.

The insurance committee plans to make recommendations on the proposals by late April or early May.

Enclosure 5

THE SUN, Lowell, Mass., Thursday, March 19, 1987 7

Commissioner, insurers urge defeat of 'seat belt discount'

By KEVIN LANDRIGAN
Sun State House Bureau

STATE HOUSE – Insurance Commissoner Peter Hiam and industry lobbyists yesterday urged defeat of legislation that would offer "price discounts" to motorists for wearing seat belts.

On the other side, however, were the two groups which battled over repeal of the seat belt law last November.

"This bill has some strange allies, doesn't it?" remarked Robert "Chip" Ford, chairman of the "Freedom First" group which convinced voters to defeat the seat belt law.

State Sen. Sal Albano, D-Somerville, wrote the controversial measure to give drivers a 10 percent break on insurance rates if they voluntarily use seat belts.

Inta Hall, vice president of the Massachusetts Seat Belt Coalition, agreed with Ford that the bonus program would help save lives.

"The time has come for the insurance industry to assist in managing the risks which, if left unattended, cost insurance companies far more in the long run," Hall said.

Ford said a bonus for seat belt users would reduce concern about safety that has arisen since the law was repealed.

"My proposal is simple: Offer a financial incentive to the motorists of Massachusetts to use their seat belts. It is said that, 'It is easier to pull a rope than to push it,'" Ford said.

The seat belt coalition also released results of a study that found usage after repeal sunk to less than 25 percent.

Locally, a December 1986 survey found Lowell's rate to be the fifth lowest at 16.7 percent. Fall River had the lowest usage at 14 percent.

In December, Acton had 39.7 percent usage, 31 percent in Pepperell and 20.3 percent in Tewksbury.

But Insurance Commissioner Hiam urged the Legislature not make any changes to a "delicately-balanced" Safe Driver Insurance Plan which provides a $60 credit to drivers with good performance records.

Hiam told the Joint Committee on Insurance that he'll have a ruling on the 1987 insurance rates early next month.

"The safe driver plan works, it's pretty difficult to administer if there were any changes to it," Hiam said.

House Insurance Vice Chairman Michael Walsh, D-Agawam, said lawmakers are fearful Hiam will approve a large rate hike.

The industry is seeking a 35 percent boost while Atty. Gen James M. Shannon argues companies deserve only a 1 percent increase.

"There's a feeling that certain things can be changed and should be changed" in the insurance rate structure, Walsh said.

Gov. Michael S. Dukakis later this spring is expected to support legislation to alter the insurance system which would include an increase in the so-called "tort threshold."

Dukakis says the $500 minimum in injuries needed to file suits is too low.

Industry officials opposing the seat belt discount included Thomas Whelton of the Alliance of American Insurers, Frank Mancini of the Independent Insurance Agents of New England and Joseph A. DiGiovanni Jr. of the American Insurance Assn.

"Right now we project seat belt usage in forming our rates but I'm not sure we could ever know who uses seat belts and who doesn't. The discount sounds unenforceable," DiGiovanni said

FREEDOM FIRST
P.O. Box 371 • Swampscott, Massachusetts 01907 • (617) 596-2517

October 24, 1989

**ADDENDUM TO
TESTIMONY
BEFORE THE UNITED STATES SENATE
SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION, AND INFRASTRUCTURE
OF THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
by
ROBERT "CHIP" FORD
Chairman, FREEDOM FIRST**

Mr. Chairman and Members of the Committee:

It was an honor to appear before your committee to testify against Senate Bill 1007 ("National Highway Fatality and Injury Reduction Act of 1989"), but I was rather surprised and insulted by the testimony presented by Charles L. Spilman, President of Traffic Safety Now, Inc. (TSN), and feel I must come to the defense of the integrity of your august body.

For years, TSN has "cooked" the figures in its fanatical and desperate attempt to comply with DOT FMVSS 208. We, the citizens of the United States, have had to bear this frustration and attempt to educate our state legislators, governors and fellow citizens to the motivation, method and means of TSN. For this organization to continue its tactics before the U. S. Senate in an attempt to confuse the entire country is, in my eyes, unforgivable.

I bore the most extreme frustration of my experience with this organization during the hearing, being unable to "cross-examine" Mr. Spilman and having no like-minded or objective Senator available on the committee to question him, and feel it of extreme importance to bring his testimony under scrutiny for your edification before decisions compound his errors.

I refer directly to Mr. Spilman's written and oral testimony:

The most blatant and transparent example of "cooked" surveys and warped conclusions appears on Page 4 of his testimony. Mr. Spilman states: "TSN has sponsored surveys in more than 30 states as well as five major national surveys. We've found more than 75 percent of Americans favor safety-belt-use laws and support strict enforcement of the laws. In five years, support for belt-use laws has increased. Today more than ever, people believe in the lifesaving benefits of buckling up...Belt-use legislation is popular in states with and without a law on the books. TSN's most recent national survey indicates nearly 70 percent of the people who live in states without a safety-belt law support passage of such legislation. That's considered a mandate when it comes to most public-policy issues, but in this case, legislators in 16 states have yet to positively respond to their constituents."

Three states have put the issue on the ballot through efforts of private citizens, and have defeated their state laws by popular demand: Massachusetts by 54-46 percent, Nebraska by 51-49 percent, and Oregon by 56-44 percent.

That is hardly a "mandate" in support of a Mandatory Seat Belt Law!

Compliance with Mandatory Seat Belt Laws in states where such legislation has been imposed reached 47 percent (according to a TSN-sponsored, 1987 University of North Carolina study), and according to Mr. Spilman's testimony (Page 2), remains at that figure today.

That is hardly a "mandate" in support of a Mandatory Seat Belt Law!

Enclosed is a copy of a truly impartial survey which appeared in the Racine (Wisconsin) Journal-Times on April 23, 1989. Its results indicated that, in its 1986 survey. 72.7 percent of the respondents opposed Mandatory Seat Belt Laws and only 27.3 percent supported them: In its 1989 survey, just under 72 percent called for an end to Mandatory Seat Belt Laws while 28.1 percent favored them.

That clearly contradicts Mr. Spilman's conclusion that, "In five years, support for belt-use laws has increased."

I resent his use of "cooked" surveys, but also must be pointed out his liberal use of "experts" without documenting his sources. It's awfully simple to resort to this tactic, but I believe it hurts the credibility of his entire testimony, as does his "cooked" surveys.

The tactic of taking credit for the reduction in ALL highway fatalities in states which impose Mandatory Seat Belt Laws is common, but I still fail to recognize how such determinations are reached. I have used a seat belt prior to, during and since repeal of the Massachusetts Mandatory Seat Belt Law. Had I been involved in an accident during our law, would I have appeared as a statistic in support of his argument, or more accurately, as not affected by the law?

Of course, the Highway Loss Data Institute study (see my original testimony) clearly refutes his statement that, "Experts [again, that flagrant use] estimate more than 100,000 serious and moderate injuries are being reduced annually as a result of belt-use legislation..."

His choice of the California accident involving four teenagers does more for the argument of other means of highway fatality and injury reduction than it does for Mr. Spilman's own position, as if this vehicle was removed from the road, or the driver was prevented from operating this vehicle, other motorists would have been removed from risk. While we are all grateful that these teenagers survived, (and for every such example, I can provide counter-examples of those either killed by the use, or convinced they would have been had they used their seat-belt) we would be more grateful to not be threatened by such behavior, and our goal of increased highway safety would be closer at hand.

Of course, "...this bill will motivate the 16 states without a belt-use law to pass effective legislation in the near future." Of course,"...it will further increase state efforts to raise belt-use rates." Of course, "...it will encourage the 34 states and the District of Columbia which have taken the initiative to pass safety-belt-use laws [three of which subsequently saw their laws defeated by popular vote, I might add] to further intensify their efforts to increase use rates."

But, is that what we want in a free society? Is that the goal of this committee and the Federal Government? Are The People to simply be left out of this decision, despite the TRUE POPULAR MANDATE? Are they to be removed from all participation in an Act which will determine their very lives and deaths?

Mr. Chairman and Members of the Committee, ask yourselves some very important questions: How many of you reached your positions of honor with less than 50 percent of the popular vote? Can you, now, do any less than to respect the democratic process? Will you allow yourselves to be taken in by these "cooked" studies, statistics and self-interest conclusions?

While some may support Traffic Safety Now, the majority of Americans have clearly indicated they prefer Freedom First!

I hope this ill-advised bill will be defeated in committee and the majority of your constituents will be recognized and heard.

Yours truly,

Robert Ford

ROBERT "CHIP" FORD
Chairman

cc

Senator James M. Jeffords
Senator Dave Durenberger
Senator Gordon J. Humphrey
Senator Steve Symms

RACINE (WISCONSIN) JOURNAL-TIMES: April 23, 1989

Seat-belt fans are few

Survey shows seat-belt law gained little new support

Journal Times readers haven't changed their opinions of laws mandating the use of auto seat belts in the 27 months since we first asked.

In a December 1986 survey, 72.7 percent of those responding opposed such a law, which was under consideration in the Legislature at that time. Supporters made up only 27.3 percent of the respondents.

That was how the 216 responses broke down in 1986.

Now, in 1989, when the Legislature is considering whether to renew the state's mandatory seat-belt-use law, the interest is higher. Our survey asking whether the law should be allowed to die in June when the sunset provision takes effect drew 434 responses.

Of those, 312 — just under 72 percent — called for an end to seat-belt laws while 28.1 percent favored either extension of the law or making it permanent.

Not only have the percentages remained essentially the same, most of the reasons for taking one position or another are unchanged as well.

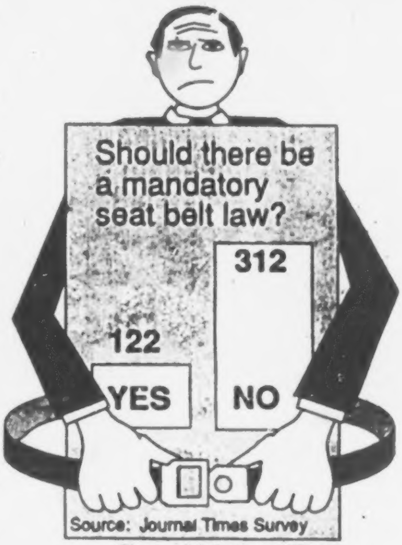
Opponents of seat-belt laws, even some who say they use their seat belts all the time, said the laws are an infringement on individual freedom. Seat-belt opponents variously described that freedom as divine ("God-given rights") or derived from the Constitution.

Even more opponents argued that use or non-use of seat belts affects only the individual.

However, proponents of seat-belt laws claimed it is not simply a private manner because those injured and killed because they weren't using seat belts end up costing all of us more in higher insurance rates and higher welfare costs.

Unlike the survey of 1986, few opponents of seat-belt laws see them as a plot by the automakers to keep from being required by law to install passive restraints (automatic seat belts) or air bags.

That argument has declined in importance as increasing numbers of carmakers are installing both automatic seat belts and air bags in more and more of their products, despite the existence of mandatory seat-belt laws in many states.


Should there be a mandatory seat belt law?
312
122
YES
NO

Source: Journal Times Survey

Theresa Schiffer/Journal Times

But this survey does reveal about 10 percent of the people believe seat belts, rather than being safety devices, are dangerous and more likely to cause than prevent injury and death.

There also were opponents of the law who said they find seat belts uncomfortable for one reason or another. Seat belts, they say, aren't designed for the elderly, handicapped and — as one respondent said — the short and fat person. Several said that adding winter clothing makes the situation nearly impossible.

Today's Opinion pages are devoted to reader responses to the survey and to a listing of those responding who signed the coupon.

March 22, 1985

MN-1

Minnesota Civil Liberties Union
628 Central Avenue N.E.
Minneapolis, Minnesota 55414

RE: Manitory Seat Belt Law

I'm writing to voice my objection to the proposed "Manatory Seat Belt Law."

✓

I personally am alive today because I was involved in a car accident in which I did not wear a seat belt. I was 5 months pregnant at the time of the accident and my daughter is alive also because I chose not to wear a seat belt the day of the accident. A truck hit me head-on with such force that it pushed the dash of my car right into the front seat back rests. Luckily I did not have a passenger with me that day, for the passenger would have been cut in two. As for me (the driver) there was only one place to be in the front seat to servive the crash and that was to slide way over tight against the drivers door and down towards the floor. Had I had a seat belt on I wouldn't have been able to make that move and I would have been killed or seriously injured by the dash of the car. Also there is no doubt in anyones mind that my unborn child would have been killed too.

It is a fact "Seat Belts Do Kill" or "Seriously Injure" people. I don't understand why when we are told how much seat belts save lives - we the public aren't also given the other side of the story about the people that are killed, maimed, and seriously injured because of seat belts.

I believe a "Man. Seat Belt Law" not only takes away my freedom of choice, it also takes away my freedom of religion. I believe wearing a seat belt is attempting to commit suicide, which is against my religion. I believe buckling on a seat belt isn't any different from holding a loaded gun to my head. If the gun goes off I'll probably be killed or seriously injured. As with a seat belt I believe if I have an accident I'll be killed or seriously injured.

While recuperating from my accident in the hospital I visited with many other car accident victims and asked them their opinion of seat belts. 100% of them were against seat belts. The ones that were wearing seat belts the day of their accident wished they hadn't. They felt they would have been better off without a seat belt. The one's that didn't wear seat belts at the time of their accident said they were glad they didn't have them on and felt they would have been injured much worse if they had worn them. I did not speak to one person in favor of seat belts - they were all against them. And these people were all involved in serious car accidents.

From what I've seen on the news, the man that is so in favor of "Man. Seat Belt Law" seems to keep referring to a person being thrown from a car and sliding across the highway in front of other vehicles. If this is his worrie - what about the bicycle ridder that hits a rock and loses control of his bike and slides across the road in front of other vehicles. Do we put seat belts on bicycles? And how about the motor cycle rider that hits a large pot hole and is thrown across the road - where is his seatbelt?

MN-2

What gives the state the right to say "Well O.K. you would have died wearing a seat belt, but thats all right." Is it O.K. for the state to pick and chose who lives and who dies. Are we starting a holocaust here or what? I know seat belts kill. I know seat belts seriously injure. I'm living proff of that. Now the state is going to tell me to take a chance on killing myself everytime I get in a car by buckling up.

The films they show about impact and force that those "Mannequins" take in a crash isn't realistic. A human is not a mannequin. A human will brace themselfs before a crash, thats automatic. Human instinct will make a person duck, lean one way or another, try to get out oa danger. A mannequin won't.

I don't know if this letter will do any good or help to fight the "Man. Seat Belt Law" but I had to write it. I don't have the money (to hire attorneys) or the knowledge to fight this seat belt law on my own but I know the MCLU is trying to fight it and I hope what I have said might help in some way.

I know there are people out there that truly believe in seat belts - fine let them wear them. They do have that right and choice. All I'm asking for is the same right and choice. Just don't force me to do something that I truly believe is so wrong.

If there is anything that I could do to help you fight the "Man. Seat Belt Law" please let me know. My phone number is 612-678-2170.

Sincerly,

Linda Schelinder
Rt. 1
Clearwater, Minnesota 55320

CC: B. J. Brinkman
House of Representatives
State Office Bldg.
St. Paul, Mn. 55155

CC: Bob McEachern
House of Representatives
State Office Bldg. Room 169
St. Paul, Mn. 55155

CC: Governor Rudy Perpich
130 State Capitol Bldg.
St. Paul, Mn. 55155

CC: Gerry Sikorski
U.S. House of Representatives
Washington, D.C. 20515

TESTIMONY OF THE
AMERICAN MOTORCYCLIST ASSOCIATION
IN OPPOSITION TO S.1007
NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989

UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION AND INFRASTRUCTURE

OCTOBER 17, 1989

The American Motorcyclist Association appears today to oppose the National Highway Fatality and Injury Reduction Act of 1989, S.1007. The proposed law would empower the Secretary of Transportation to withhold up to 10 percent of any state's highway construction funds for failure to enact laws mandating use of front passenger seatbelts, child safety restraints and motorcycle helmets. For purposes of our testimony comments will be limited to motorcycle helmet laws.

The American Motorcyclist Association (AMA), headquartered near Columbus, Ohio, was founded 65 years ago to "pursue, promote, and protect the interests of motorcyclists" in the United States. At present we have 168,000 individual members whose interests include all aspects of motorcycle activity. The Association has always been vitally interested in motorcycle safety, but has sought to balance that concern with protecting the individual freedoms that motorcycling exemplifies for so many AMA members.

To properly evaluate S.1007 several key questions must be asked:

A. What is the proper venue for issues such as mandatory helmet laws? Congress or state legislatures?

B) Are federal sanctions appropriate inducements for promoting comprehensive motorcycle safety programs at the state level?

C) Do social costs associated with motorcycle injury vary dramatically from the population at large? Compared to other more pressing healthcare problems, are they significant?

D) Are non-governmental initiatives providing effective responses to motorcycle safety issues? Are these adequate to improve the motorcycle safety environment without federal interference?

E) The final test for any proposed law is the question of NEED. Is this bill necessary?

State Legislature Or Congress

The ultimate effect of S.1007 will be to force state legislatures to enact mandatory helmet laws without regard to issues of individual freedom and personal choice or the reasonableness of such a statute. In 1975 the AMA appeared before Congress to argue that these issues should be deliberated by state legislatures. We believe state governments are in the best position to evaluate the highway safety programs of their states in the context of local and regional demands and needs.

Since the inception of mandatory helmet laws, following the passage of the Highway Safety Act of 1966, the debate in state legislatures over such laws has been constant. In the first year following passage of the 1966 law 26 states moved to adopt helmet laws. In 1986, 26 helmet related bills for either repeal or reinstatement were under consideration. In 1989, thus far, no less than 64 separate pieces of legislation have been introduced in state legislatures to repeal, reinstate or otherwise modify existing helmet law provisions.

State legislatures are doing what needs to be done; providing the necessary and appropriate forum for considering such laws, and they are doing it without the application of the federal sanction "club." Without question state legislatures are the proper province for this issue because of their proximity and responsiveness to those who have elected them.

Federal Sanctions as an Inducement

Motorcycle safety is a complex equation that requires the implementation of a comprehensive program combined with imagination and initiative if substantial gains are to be realized. Prior to 1975 Federal Section 402 Funds represented the best measure of any imagination or initiative displayed by any given state in addressing motorcycle safety beyond what was required by the federal standard. A 1975 survey of State Governors Highway Safety

Representatives by the AMA found that over an eight year period only $1.2 million, or one-third of one percent of available 402 funds was spent on motorcycle safety.

Prior to the [redacted] repeal of federal blackmail powers in 1975 motorcycle safety programs were limited to compliance with the federal motorcycle safety standards. This inhibited the development of alternatives of more imaginative programs that could have included motorcycle rider education, improved licensing and testing, increased motorist awareness and heightened knowledge of the role of alcohol and substance abuse.

Typical examples were included in this response to AMA's survey from Clifford E. Arden, director, State of Washington Traffic Safety Commission in August, 1975;

> "Since the state is in full compliance the Traffic Safety Commission has not channeled large amounts of its federal highway safety funds into this motorcycle standard area."

The use of sanctions is considered increasingly repugnant as federal agencies have come to rely on financial withholding to institute programs. As recently as August 1989, President Bush backed away from a plan to withhold federal highway funds from states that refused to revoke the driver's license of drug offenders. NBC News reports that the plan was unpopular with the nation's governors who believed such a measure was an encroachment on state's rights.

If the issue of federal sanctions is sensitive enough to be deemed inappropriate for our nation's number one social problem then they are certainly inappropriate as an enforcement tool to enact motorcycle helmet laws for which proven alternatives exist.

Social and Economic Issues

In support of mandatory helmet laws it has been suggested that motorcycle accidents and injuries contribute a disproportionate burden to society because of medical costs that are subsidized by taxpayers. Among the most celebrated studies attempting to quantify this phenomena is "The Public Cost of Motorcycle Trauma," by Frederick P. Rivara, M.D., et al, published in the Journal of the American Medical Association (JAMA), July 8, 1988, Vol. 260, No. 2.

The study was conducted from a review of 105 motorcycle accident victims admitted to the Harborview Medical Center (HMC), a Level I trauma center in Seattle, Washington. The purpose of the study was to determine who pays for the care of motorcycle accident victims and how much of this cost is subsidized by public funds.

A summary of the sources of payments reveals that Medicaid paid 56.3 percent of total charges, other public funds were responsible for 7.1 percent, commercial insurance paid 22 percent, while patient payments were limited to .7 percent. Unknown sources accounted for 13.9 percent.

While the Harborview study has frequently been cited as justification for mandatory helmet laws it should be noted that the authors did not tell us the number of victims actually wearing a helmet. As a result, no reliable correlation can be drawn between societal costs and helmet laws.

In September 1988, two months after the publication of the study by Rivara, David Gitch, administrator of the HMC, testified before the House Ways and Means Subcommittee on Appropriations concerning the methods of payment experienced from Harborview's general patient population.

Gitch, supported by testimony from Bruce Ferguson, associate executive director of University Hospital, stated that 44 percent were on Medicaid, 23 percent pay through Medicare, 26 percent pay through third party health insurance plans and 7 percent don't pay at all.

A quick comparison of motorcycle accident victims from the Rivara study and Gitch's picture of the general patient population at HMC reveals that 63.4 percent of motorcyclists relied on public funds while 67 percent of the general patient population was dependent on taxpayer dollars. This demonstrates that motorcyclists are no less responsible than an average accident victim for unpaid medical bills.

In the December 9, 1988, issue of the JAMA, Vol. 260, No. 22, Ellen J. MacKenzie, Ph.D., et al, published, "The Economic Impact of Traumatic Injuries." This is a one year study "of charges related to the receipt of healthcare and rehabilitation services for a panel of 487 trauma patients ... initially hospitalized in one of two trauma centers." The study was based on trauma patients discharged from the Maryland Institute for Emergency Medical Services or the Johns Hopkins Hospital between July 1982 and March 1983.

In comparing total patient charges between the Harborview study and the MacKenzie study we found that the average cost for a motorcycle accident victim was $25,794 per patient in Washington, based on a relatively small patient population compared to $32,039 per patient for the 487 patients in Maryland. This is $6,245 less per patient for motorcycle accident victims.

For comparison, the Harborview costs are calculated in 1985 dollars, ostensibly more expensive than the 1983 dollar calculations used for the Maryland study.

The assertion that motorcycle accident victims contribute a disproportionate share to the rising national healthcare crisis has been cited as the main reason to require helmet laws. However, when compared to the total social healthcare picture, motorcyclists' contribution is insignificant. When considered in contrast to other social costs the argument just doesn't hold up.

According to the National Highway Traffic Safety Administration (NHTSA), Americans spent $3.3 billion on all motor vehicle accident related medical expenses. This compares with $387 billion for total U.S. healthcare costs (Statistical Abstract of the U.S.), indicating motor vehicle accidents account for approximately 1 percent of our nation's annual healthcare bill.

There are approximately eight million motorcyclists who constitute roughly 5 percent of a total driving population of 160 million licensed drivers. If it is assumed that motorcyclists account for as much as 10 percent of all accident related medical expenses (which could be argued as excessive), then all motorcycle accidents represent only 1/10 of one percent of all medical expenses in a given year. This could be further refined and subdivided by determining what percentage of these expenses were incurred by helmeted vs non-helmeted riders.

Non-Governmental Initiatives - Are They Adequate?

One of the benefits of the removal of federal sanction authority has been the emergence of several motorcycle safety initiatives that are not dependent on the federal government. The most notable of these was the establishment of the Motorcycle Safety Foundation in 1974. The real benefit of its existence was not realized until much later when its programs became widely available.

With the demise of federal sanction authority, rider organizations began to promote motorcycle safety programs and have been successful in passing state legislation to support viable alternatives to mandatory helmet laws. Self-funded motorcycle operator training is by far the most noticeable of these. At present 33 states offer some form of motorcycle safety and education program paid for by increases in motorcycle registration or license endorsement fees. Without exception motorcycle rider organizations supported each of these laws. In effect, motorcyclists have "taxed"themselves to benefit rider safety.

Rider organizations have also pressured for more stringent licensing and testing procedures to ensure that unskilled and unqualified riders are prevented from operating motorcycles on public highways. According to NHTSA, as many as 40 to 60 percent of motorcycle accident victims are not properly licensed to operate a motorcycle identifying this as a target area for increased focus by the motorcycling and safety community.

Among the principal benefits of rider funded education legislation has been the inclusion of provisions that permit expenditures on other areas of a comprehensive motorcycle safety program. It has been known for years that in collisions involving a motorcycle and another vehicle that the other vehicle is most likely to have been at fault. However, during the era when states relied solely upon mandatory helmet laws to comply with the federal motorcycle safety standard virtually no money was expended to improve motorists' awareness of their responsibilities to share the road with motorcyclists. Almost all legislation providing for rider funded education programs permits funding of public information and motorist awareness.

Educating riders of the severe consequences of combining two-wheeled travel with alcohol or controlled substances has also been the focus of many non-governmental initiatives. Many rider organizations, including the AMA, have conducted member education programs addressing this problem.

The AMA is currently engaged in a grant program with the NHTSA to address three concerns identified as problem areas for young and inexperienced motorcycle operators: licensing, drug/alcohol abuse and voluntary helmet use. The program, entitled "AMA PRO-RIDER" will rely on a proven network of 2300 motorcycle dealers as a distribution system for counter cards designed to involve riders in the "AMA PRO-RIDER" program. The cornerstone for the program is the "PRO-RIDER" code which defines eight common sense operating principles on a wallet size card. The incentive for participating in the program is provided by the offer of a free sun shade helmet visor strip for those who sign-up as an "AMA PRO-RIDER" by returning a postage paid card to the AMA. By return mail we will forward the visor strip, PRO-RIDER decal, another PRO-RIDER wallet card and a follow up letter to reinforce the safe riding principles. The program is being designed and produced for distribution in late winter 1990, in time for the spring riding season. Names and addresses of participants will be recorded to evaluate participation and effectiveness of the program.

The motivation for non-governmental safety initiatives does not come as a result of sanctions or mandated programs. The motivation and initiative come as a result of a commitment by riders, safety professionals and state agencies to improve the operating environment of motorcyclists.

Is There a Need for S.1007?

Perhaps the ultimate test of the necessity of this legislation lies in motorcycle accident and fatality figures. According to the NHTSA the number of motorcycle accidents in 1988 decreased 11.4 percent and fatalities decreased 9.7 percent compared to 1987. The number of accidents per 10,000 registrations declined 5.4 percent and fatalities per 10,000 registrations declined 3.5 percent.

The NHTSA also reported recently that motorcyclists have made dramatically greater strides in safety than other transportation modes. NHTSA's Fatal Accident Reporting System (FARS) documented that motorcyclist fatalities have plummeted 30 percent from 5,144 in 1980, to 3,541 in 1988.

While registrations during this period have declined, the decrease in fatalities cannot be attributed entirely to a smaller vehicle population. The Motorcycle Industry Council (MIC) indicates in their "Motorcycle Statistical Annual" that highway motorcycle use actually increased by about 20 percent for the period from 1980 thru 1987, from 10 billion miles to 12.6 billion miles, respectively.

There is no need for federal sanctions to induce states to pass mandatory helmet legislation and cannot be justified as long as state legislatures debate the issue. In fact, such laws are a hotly debated issue with 64 separate bills dealing with helmet use having been introduced during 1989.

In the past year three states have passed legislation requiring helmet use for all riders; Nebraska, Oregon and Texas. Connecticut also moved to require helmet use for instructional permit holders, passengers and riders under age 18.

Clearly, S.1007 is not needed when motorcycle accidents and fatalities are showing a clear, strong downward trend and the issue is being actively debated in the legislatures of our nation's states. When considered in conjunction with the comparatively small part motorcycle crashes contribute to total healthcare costs, this legislation should not be permitted to pass.

Conclusion

The American Motorcyclist Association strongly believes that the National Highway Fatality and Injury Act of 1989 should not be allowed to pass. Issues of highway safety and personal freedom have traditionally and rightfully been resolved by state governments and the imposition of S.1007 is a violation of state's rights.

Federal sanctions have not proven to be a viable inducement in promoting programs to improve motorcycle safety. In fact, they may have served as disincentives for more creative programs.

The question of motorcycle accident victims' contribution to social costs associated with their injuries is sufficiently clouded by statistics to require a mathematics interpreter. However, there is sufficient evidence to conclude that in the instance of one frequently cited study that motorcycle accident victims are no more reliant on taxpayers' dollars than the public at large.

There are sufficient non-governmental initiatives in the area of motorcycle safety to discourage the necessity of federal sanctions to implement mandatory helmet laws to supplement existing state and private programs.

Finally, there is clearly no need for this legislation as reflected in an eight year decline in accident and fatality figures and the ongoing debate of the issue within state legislatures.

In consideration of all of these issues we respectfully request that this legislation be tabled indefinitely.

AMA
AMERICAN MOTORCYCLIST ASSOCIATION

GOVERNMENT RELATIONS POSITION

TOPIC:

MANDATORY HELMET LAWS: An Issue Of Individual Choice

POSITION:

The American Motorcyclist Association has always encouraged the use of helmets, gloves, sturdy footwear, and protective garments in general, as part of a comprehensive motorcycle safety program to help reduce injuries and fatalities in the event of a motorcycle accident.

The Association will not oppose laws requiring helmets for minor motorcycle riders and passengers. It believes that many young motorcyclists and passengers may lack the maturity to make an informed decision regarding the use of motorcycle helmets. It is, therefore, appropriate to require the use of safety helmets for minors.

Although the Association strongly encourages helmet use by all motorcyclists, it maintains a long-standing fundamental belief that adults should continue to have the right to voluntarily decide when to wear a helmet.

The Association further believes that helmet use alone is insufficient to ensure a motorcyclist's safety. There is a broad range of other measures that can be implemented to improve the skill of motorcycle operators as well as reduce the frequency of situations where other vehicle operators are the cause of accidents involving motorcycles.

DISCUSSION:

The AMA has traditionally supported the right of adults to choose whether to wear a helmet. Our position has remained unchanged since the 1966 inception of mandatory helmet laws across the nation. Even though our members are strongly encouraged to wear helmets, we believe the choice clearly should remain with the individual.

To better understand the Association's position on helmet laws, it is first necessary to make a distinction between the use of helmets and mandatory helmet laws. Some members of society tend to view the helmet only as a mechanical safety device in the same category as seatbelts. What they fail to realize is that it is viewed by motorcyclists as an accessory of personal apparel connected with their chosen lifestyle and their right as adults to make their own decisions. Unlike seatbelts, helmets do not come "standard" with motorcycles and represent a separate purchase. Helmet laws, on the other hand, are a manifestation of society's belief that its members lack the wisdom to make decisions about personal safety and must therefore be subjected to arbitrary laws. This is a concept we must reject.

The injuries from which a helmet may protect a rider do not occur until after an accident. A mandatory helmet law does nothing to prevent an accident from occurring. The AMA has been a strong advocate of motorcycle rider education, improved licensing and testing and increased public awareness; all proven preventative measures that actually reduce accidents and improve safe operation. These statistically viable programs did not exist 20 years ago, and there is some evidence that exclusive focus on helmet laws, while ignoring the benefits of these programs, has been detrimental to the advancement of a comprehensive approach to motorcycle safety.

It is possible that the political realities of the legislative process may actually prevent the implementation of other motorcycle safety initiatives in the presence of mandatory helmet laws. Only nine helmet law states have passed rider education legislation, while 20 "free choice" states have adopted comprehensive rider education programs. For example, only after a decade-long debate on helmet use did Florida finally adopt a rider education program in 1987. Motorcycle rider training bills were continuously postponed while helmet law proposals dominated that legislature's attention.

It is suggested by some that permitting mature adults to make their own decisions on helmet use creates an excessive burden for society as a result of healthcare costs incurred by helmetless riders. However, when the costs of motorcycle related injuries are examined in the context of the total social healthcare picture, the figures are not unusually startling.

According to the National Highway Traffic Safety Administration, Americans spent $4.1 billion on all motor vehicle accident related medical expenses in 1986. This compares with $425 billion for total U.S. healthcare costs (1987 Statistical Abstract of the U.S.*), indicating motor vehicle accidents account for less than 1 percent of our nation's annual healthcare costs. The Motorcycle Industry Council, in its 1988 Motorcycle Statistical Annual, estimates that there are approximately 7.5 million motorcyclists who constitute roughly 4 percent of a total driving population of 180 million licensed drivers. If it is assumed that motorcyclists account for as many as 10 percent of all accident related medical expenses (which could be argued as excessive) then all motorcycle accidents represent less than one-tenth of 1 percent of all medical expenses in a given year. This figure would be further reduced if it were possible to determine what percentage of those expenses were incurred by helmeted vs. non-helmeted riders.

Realistically, motorcyclists are certainly not the only group of persons who might create a social burden as a result of individual decisions. We are a society of risk takers and even by avoiding the "extremes," mountain climbers, bicyclists, skiers, cowboys, and joggers could be placed in a similar category. Despite these "burdens," we don't see aggressive legislative action designed to limit society's exposure to these costs nor would such legislation be appropriate. We have long ago decided as a civilized society to balance individual freedoms with necessary social costs.

The value of a helmet is neither enhanced nor diminished by the presence or absence of a mandatory helmet law. We believe that the same principle applies to mandating personal safety, whether it be for motorcycling, skiing or some other risk-related activity. We must rely on individuals and society to provide the education and the experience to aid us in making decisions that are right for us. Ultimately, society cannot be expected to make individual decisions; we must be free to make them ourselves.

*Reflects 1985 data

Revised 5/89

MRF
MOTORCYCLE RIDERS FOUNDATION, INC.

THE NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989

WRITTEN TESTIMONY OF

MICHAEL WMS. FARABAUGH, CHAIRMAN

MOTORCYCLE RIDERS FOUNDATION

SUBMITTED TO

THE U. S. SENATE COMMITTEE ON

ENVIRONMENT AND PUBLIC WORKS

OCTOBER 17, 1989

[illegible] IN COMMUNICATION ASSISTANCE
25 "E" Street, N.W. • 8th Floor • Washington, DC 20001 • (202) 783-0600 • FAX (202) 783-3501

MRF
MOTORCYCLE RIDERS FOUNDATION, INC.

Dear Mr. Chairman and members of the Committee:

Thank you very much for allowing me the opportunity to provide valuable information to the U. S. Senate Committee on Environment and Public Works, regarding The National Highway Fatality and Injury Reduction Act of 1989, S.1007.

My name is Michael Farabaugh from South Bend, Indiana. By the way, I must mention South Bend is Notre Dame country! Regarding my background in motorcycling and rider education, I write and photograph for two national motorcycle publications and serve in the capacity of Motorcycle Safety Editor of another national publication. I am Chairman of the Board of the Motorcycle Riders Foundation, a national motorcycle grassroots organization associated with 45 different state organizations representing 75,000 motorcyclists. I have been a Chief Instructor for the Motorcycle Safety Foundation for 10 years and I'm the 5th ranking Chief in America. I have also served on the Motorcycle Safety Foundation's curriculum development committee. I have been Executive Director of ABATE of Indiana's motorcycle safety program since 1978. Over the past 11 years I have taught rider education in 30 states training over 16,000 graduates. I have ridden two wheels over one million miles.

INFORMATION COMMUNICATION ASSISTANCE
25 "E" Street, N.W. • 8th Floor • Washington, DC 20001 • (202) 783-0600 • FAX (202) 783-3501

I represent motorcycling and motorcyclists from my heart as do many of these folks attending this hearing today. Each one of us makes a conscious dedicated effort to promote our sport/lifestyle in a form that provides solutions to our problem. It seems we all have a common goal and that is the reason behind S.1007: that very admirable goal is to prevent folks from having accidents and dying while riding two wheels. Every motorcyclist throughout our great land would love to help this committee reach that goal.

Please allow me this opportunity to explain just how together we can accomplish that goal through **EDUCATION**. Fact is, motorcyclists across this nation have taken aggressive positive action, working as a team to accomplish a huge reduction in fatalities. Motorcyclists have initiated legislation in 32 states and through increased registration fees have collected over 10 million dollars for rider education in 1988 alone. Over the past 5 years motorcyclists have contributed 65 million dollars towards providing a viable rider education program with a minimum tuition to new and experienced riders. These programs are funded by motorcyclists, employing several thousand administrators and instructors through state governments, with no expense to taxpayers.

Rider education is a responsible hands-on approach that is securing results, reducing accidents and fatalities dramatically in almost every state where it has been made available through the user fee. In 1988 Indiana's Motorcycle Safety Program working in conjunction with the Department of Education, the Governor's office and our state legislature, reduced fatalities and accidents by an incredible 31 per cent -- 41 fewer people died on a motorcycle than in 1987. Indiana has a helmet law for minors, but allows responsible adults to make their own decision. A matter of fact, the 10 safest states to ride a motorcycle in America per 10,000 registered motorcycles are: Vermont, North Dakota, Alaska, Iowa, South Dakota, Rhode Island, Minnesota, Colorado, Indiana and Michigan. All of these states have viable rider education programs... only one has a helmet law for adult motorcyclists, Michigan.

Questionable is the need for federal legislative action on the helmet law issue. There are 47 states with some type of helmet law legislation on the books. State legislatures have the qualified expertise, and closeness to the citizens, necessary to evaluate the criteria and deal with the controversy and emotion surrounding helmet laws. As well, last year 31 state legislatures debated the issue of motorcycle helmet laws.

EDUCATION...PROFESSIONAL EDUCATION

With a professional curriculum being implemented through the proper channels utilizing talented instructors who create a comfortable learning atmosphere for students, rider education is not only a viable alternative to a national helmet law, we have proof it is

working. The past eight years have been the most formidable for rider education. Motorcycle fatalities have dropped nationwide by 30%. This figure has been consistent across the country, regardless of the status of helmet use laws.

In closing, as Mark Twain once said,"**EDUCATION IS EVERYTHING!!!**" I would like to extend Mark Twain's advice to each of you, recommending **EDUCATION** as an outstanding alternative to Mandatory Helmet Laws...it works!

Respectfully submitted:

Michael Wms. Farabaugh

MWF/df

MOTORCYCLE HELMET USE AND COLLISION PERFORMANCE

RESEARCH FINDINGS FROM THE UNIVERSITY OF SOUTHERN CALIFORNIA

James V. Ouellet

HELMET FACTS FROM THE UNIVERSITY OF SOUTHERN CALIFORNIA ON-SCENE, IN-DEPTH INVESTIGATIONS OF 1200 MOTORCYCLE ACCIDENTS

1. When an accident occurs, a rider without head protection is 2-3 times as likely to suffer brain injury as a helmeted rider.
2. Riders without a helmet are about 2½ times as likely to die as a helmeted rider when a collision occurs. Helmeted riders averaged 1 death per 30 accidents; those without a helmet averaged 1 fatality per 13 accidents.
3. Pavement is the rider's #1 injury threat, accounting for more head impacts than all other surfaces. Helmets virtually eliminate brain injury resulting from pavement impact, yet about 20% of fatally injured riders hit the head only against pavement.
4. Helmet use nearly assures that a violent, high-energy collision is required to cause brain injury. A sizable minority of unhelmeted riders who sustain brain injury were involved in low-energy, low-threat accidents such as a fall and slide on the pavement.
5. Rider age and riding experience are greatly overrated as accident risk factors. Formal education, roadway type and trip length exert a far greater effect on accident risk than age and experience.
6. Comparison of accident risk and helmet use factors reveals an ironic twist: Helmet use consistently tends to be lower in the very situations where accident risk is higher, and vice versa. In other words, motorcyclists do a poor job of evaluating risk.
7. Helmets do *not* break necks. In fact, they may reduce neck injury, which is usually the result of impact to the head. Spinal cord injury is very rare in motorcycle accidents. Paralysis resulting from preventable brain injury is far more common.
8. We found *no* evidence to support contentions that helmets cause accidents by reducing peripheral vision. Over 90% of collision hazards come from in front of the rider, while less than 3% come from areas that might conceivably be affected by restriction of peripheral vision. The message is: "Watch where you're going and protect your eyes to assure full visual acuity."
9. Not a shred of scientific evidence could be found to support allegations that helmets cause accidents by impairing the rider's hearing, by causing fatigue (45% of accidents happened within 10 minutes of when the rider started) or by making the rider feel somehow "invulnerable".
10. Helmets that meet the DOT standard provide excellent protection. Over 90% of impacts to helmets are less severe than those required to meet the DOT standard.
11. For $30 you can buy a DOT-qualified helmet and a huge amount of head protection. An additional $200 will buy a prettier, more comfortable and more prestigious helmet and perhaps a little more protection.

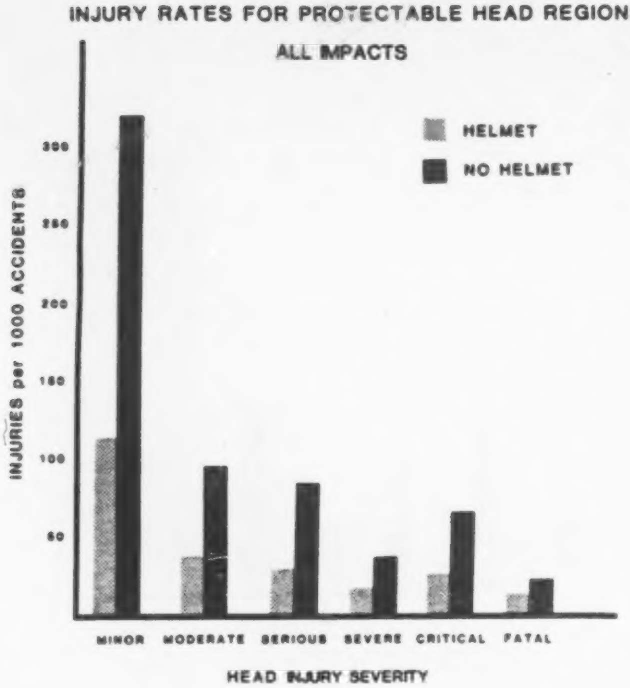
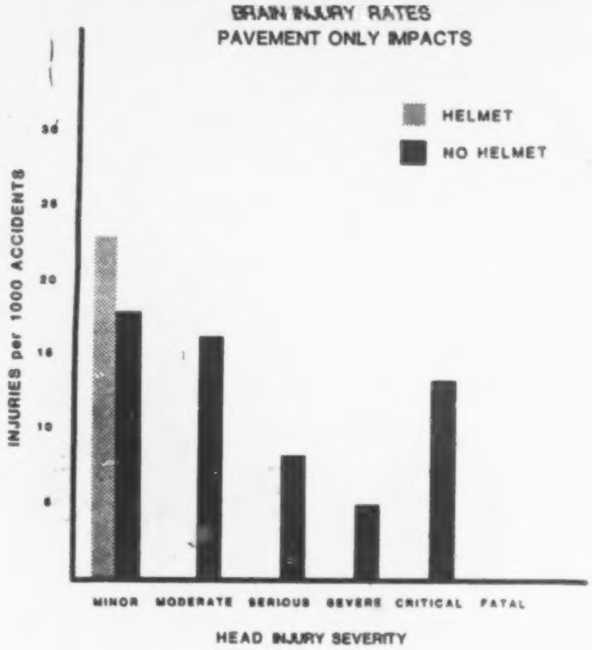


Figure 1 above compares injury rates to the protectable regions of the head (neck and face regions are excluded) for all impact surfaces.

At every level of injury severity, riders without head protection were two to three times as likely to suffer head injury as those who wore a helmet. Riders with "severe" and "critical" head injuries sometimes died, often as a result of head injuries, as did all those at the "fatal" level.

In order to adjust for the unequal numbers of helmeted and unhelmeted riders, the injury rates were calculated in the same way as baseball batting averages: by dividing the number of injuries by the number of riders. Thus, 54 "moderate" level injuries (such as a simple concussion with brief loss of consciousness) among 537 helmeted riders yielded a rate of 100 moderate level injuries per 1000 unhelmeted rider involved in accidents.



Pavement is by far the most common surface motorcycle riders strike, and helmets are extremely effective in protecting against pavement impacts.

Figure 2 above shows brain injury rates for helmeted and unhelmeted riders when pavement when the only surface against which the rider strikes his head. None of the helmeted riders had any brain injury above the minor level (which is comparable to being stunned, but not knocked unconscious by a blow).

In stark contrast, riders without head protection suffer brain injuries ranging all the way up to the critical level. Roughly 20% of riders killed without a helmet on hit the head against nothing other than ordinary flat pavement.

These findings suggest that if all riders wore a helmet, death and debilitating brain injury from pavement impacts would be virtually eliminated.

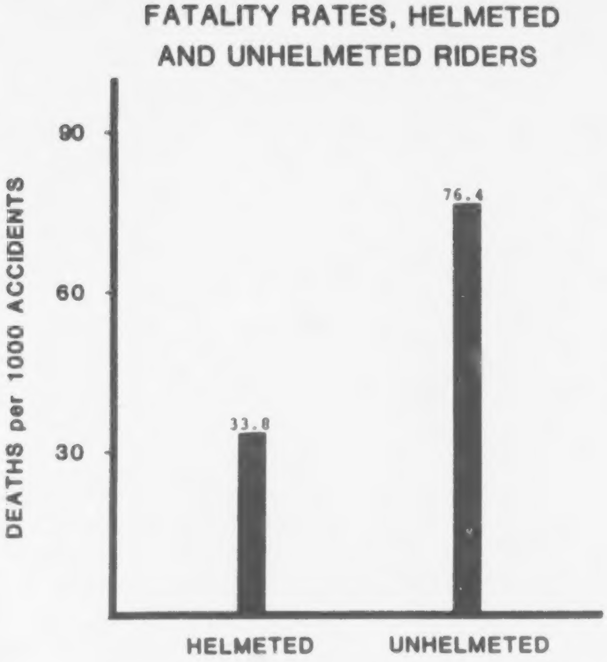
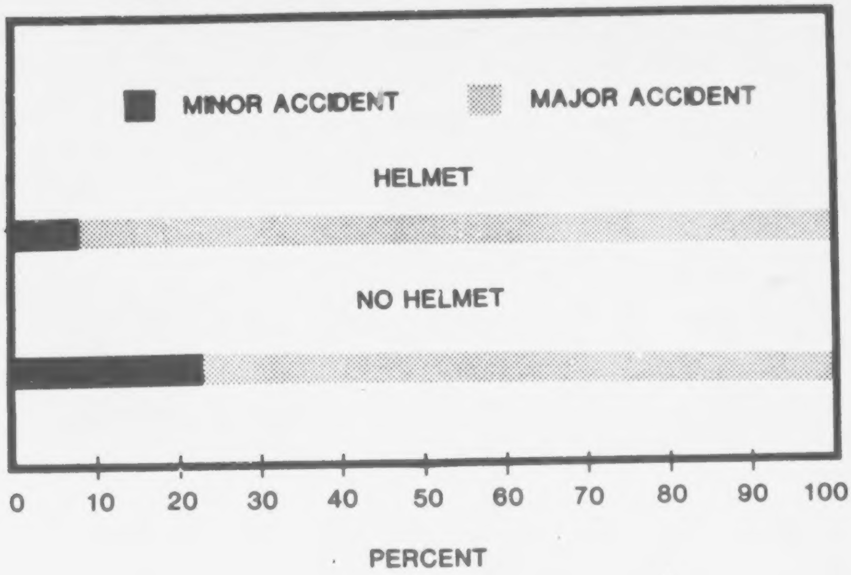


Figure 3 above shows the fatality rates for helmeted and unhelmeted riders; the data were taken directly from the Hurt Report (pp. 242 and 244). Unhelmeted riders were 2.26 times as likely to die as those who wore head protection.

It is alleged by some that helmets have no significant effect in reducing deaths. If that were true, then the odds that random differences between the unhelmeted and helmeted groups could produce a difference in death rates this large is less than one in a hundred (using a simple 2 x 2 chi-square test). These odds are so low that a scientist would reject the hypothesis that helmets have no effect on fatality rates.

RIDER DEATHS AND ACCIDENT SEVERITY



The best indicator of the violence of a motorcycle accident is the severity of the injuries to the rider's torso and extremities. In the graph above, an accident is listed as "minor" if the most serious torso/extremity injury was no worse than a simple, uncomplicated bone fracture, joint sprain or a large abrasion. "Major" injuries could range from a survivable complicated bone fracture to unsurvivable heart rupture or torso transection.

The graph above classifies 300 fatal motorcycle collisions as "minor" or "major" based on the severity of the worst torso or extremity injury.

Two important points can be taken from this graph: 1) about one-fifth of unhelmeted riders who die are killed in seemingly minor accidents in which the propects of full recovery are excellent--if head injuries are prevented, and 2) Helmets cannot prevent all motorcycle fatalities because so many occur in high-energy collisions with major injuries to the chest, abdomen and extremities. In some cases, death would occur even if there were no head injury at all, simply because of major trauma, especially to the chest and abdomen.

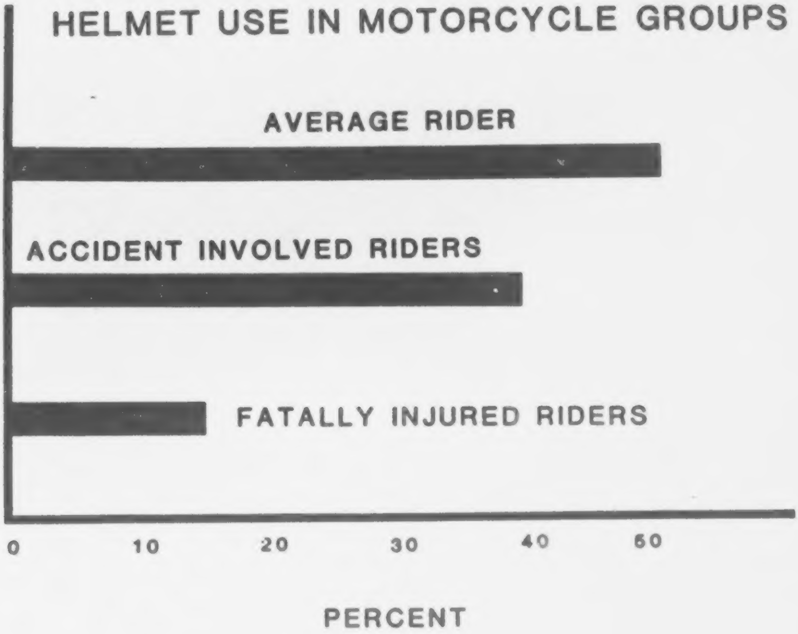


Figure 5 above shows the helmet use rates among various groups of motorcyclists. On average, about half the riders on the street had a helmet on. By contrast, only about 40% of the riders in accidents had a helmet on when they crashed. This lower rate of helmet use is because helmets tend to be worn less in the times when accident risk is actually higher, as shown in Figures 9-13.

Although 40% of the accident-involved riders had a helmet on, only 12-15% of the fatally injured motorcyclists had a helmet on when they crashed. The 15% rate of helmet use in fatalities is much lower than the 40% that would be expected if helmets really had no effect on the probability of death. This comparison again illustrates the powerful effect of helmet use in preventing fatalities.

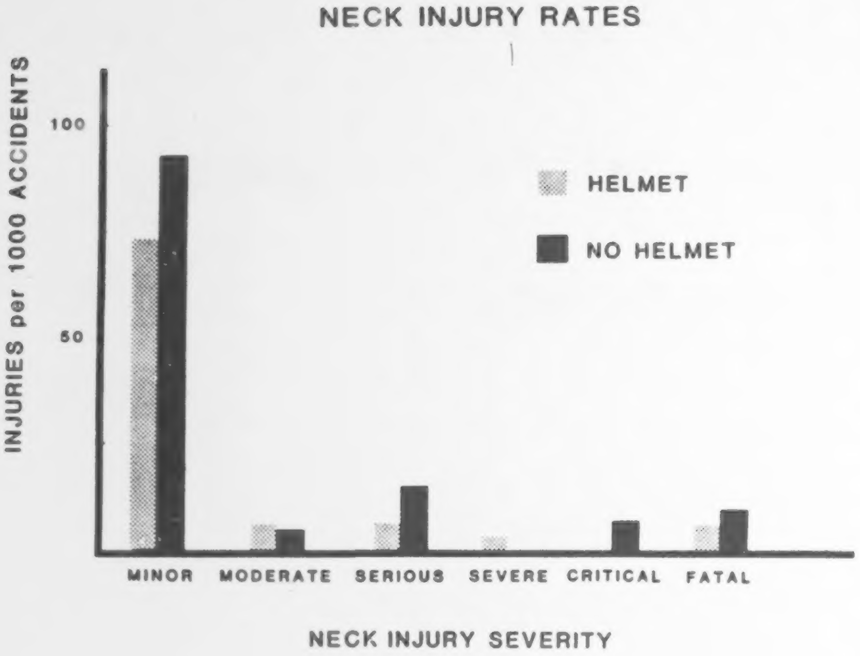
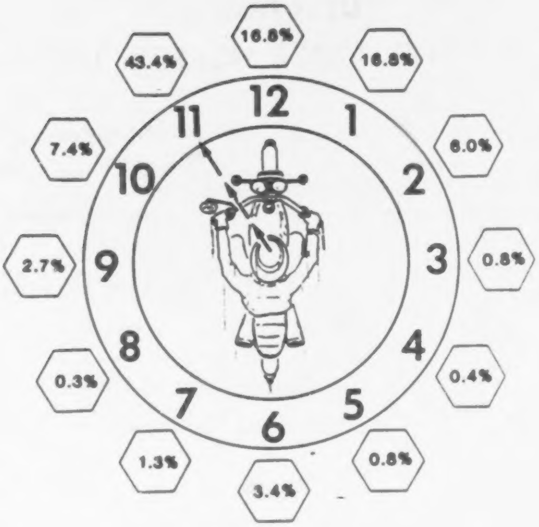


Table 6 above shows the neck injury rates for helmeted and unhelmeted riders. Note that the great majority of neck injuries are minor and moderate levels of severity, such as a sore neck or muscle spasm. Spinal cord injuries are at the severe, critical and fatal levels are very uncommon.

In the USC study, what few spinal cord injuries there were all occurred in very severe, high energy accidents. In all those cases the riders died of massive injuries, of which spinal cord injury was only one. There were NO riders, in 846 nonfatal cases, who suffered spinal cord injury. Thus, although spinal cord injury is greatly feared, it appears to be a very low probability occurrence. Unfortunately, paralysis is far more common from brain injury that could be prevented by wearing a helmet.

The figure above shows that helmeted riders get fewer neck injuries at most levels of severity, and fewer at the high levels that involve spinal cord injury. Helmets may in fact REDUCE neck injuries, which are usually the result of impact to the head. Helmets certainly have NOT been found to pose any increased risk of neck injury.



11+12+1: 77.0%

10+11+12+1+2: 90.4%

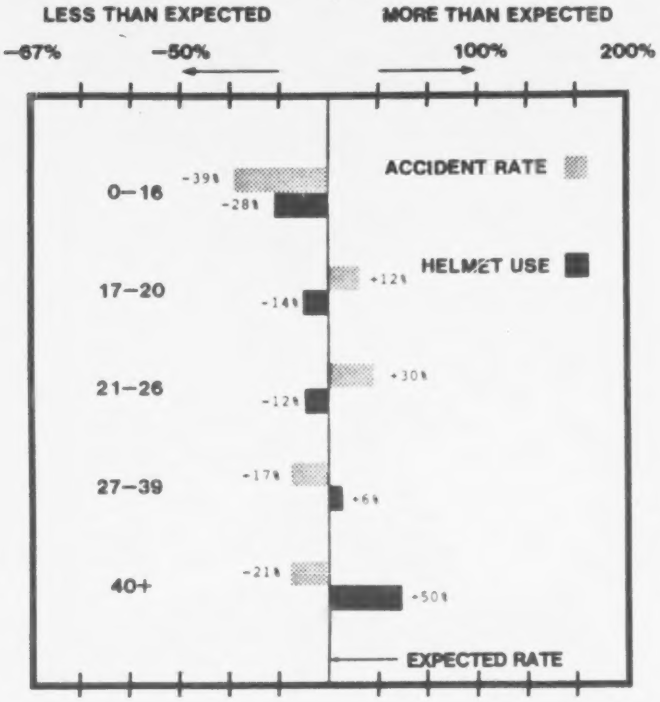
5+7: 2.1%

The figure above shows where the accident hazards were located from the rider's point of view during the precrash phase of the accident. For example, a car straight ahead would be at the 12 o'clock location. You can see that over 77% of the hazards were at the 11, 12 and 1 o'clock positions. Over 90% fell within the 10 to 2 o'clock locations.

The DOT standard requires no restriction of peripheral vision as far back as the 8:30 and 3:30 locations, and most helmets provide even more unrestricted peripheral vision. The hazards coming from the 4, 5, 7, and 8 o'clock locations, where peripheral vision restriction could conceivably be a factor, amounted to less than 3% of the precrash lines of sight. None of the helmeted riders in the USC study thought that the helmet had restricted peripheral vision and thereby contributed to causing the accident.

The visual problem in motorcycle accidents in NOT restriction of peripheral vision. Instead, it's a matter of watching what's right out in front of you and protecting the eyes to assure full visual acuity.

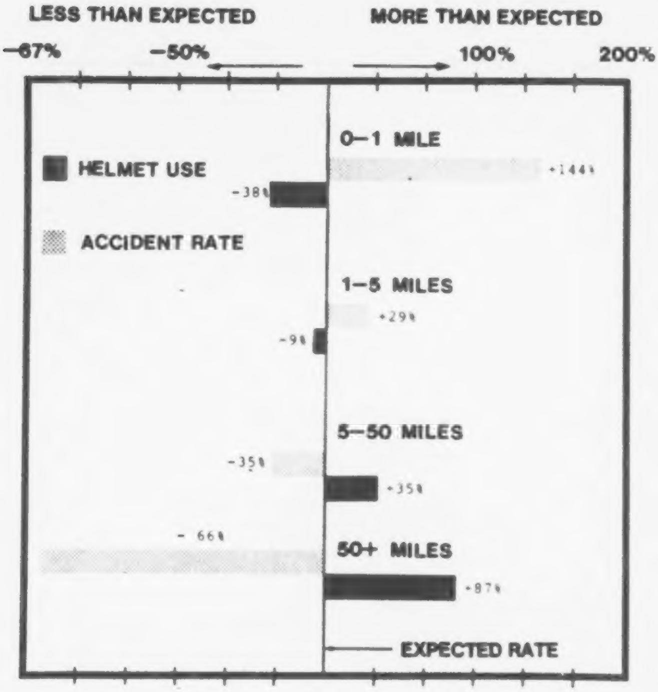
RIDER AGE
ACCIDENT RISK & HELMET USE



The graph above shows how accident risk (gray bars) and helmet use (black bars) vary depending on how old the rider is. Accident risk increased as riders got older, peaking in the 21-26 age group and declining as riders got older. Helmet use showed a steady increase, taking a big jump among riders over 40.

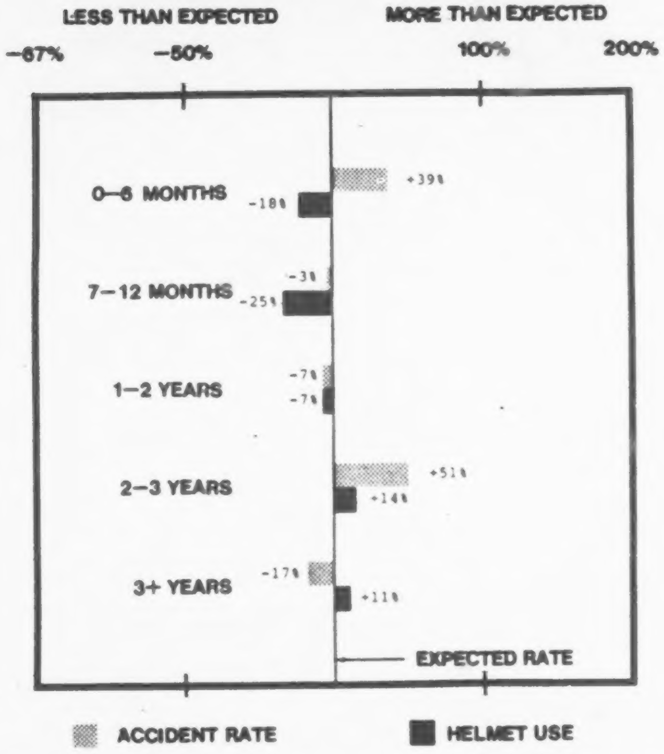
The accident rate comparisons in this graph were made by comparing the proportion of accident-involved rider in each group to a group of over 600 riders interviewed on the streets and highways. This allowed a comparison of accident-involved to non-involved riders. Helmet use comparisons were made by comparing any single group to the average rate of helmet use among all accident involved riders. The same method was used for the three graphs that follow this one.

TRIP LENGTH
ACCIDENT RISK & HELMET USE



This graph shows that accident risk (gray bars) decreases the longer the trip the rider was taking at the time of the accident. Also, the longer the trip, the more likely the rider is to be wearing a helmet. Trip length seems to be the most powerful factor affecting accident risk and helmet use.

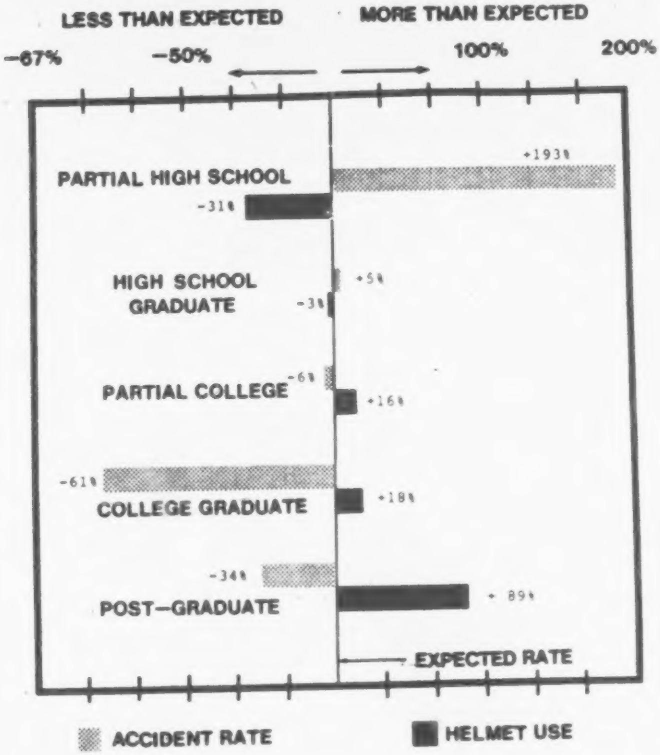
RIDING EXPERIENCE: ACCIDENT RISK & HELMET USE



This graph compares accident risk (gray bars) for riders with different levels of street riding experience. We found riders with less than 6 months, and those with 2-3 years of riding experience to be at increased risk of accident involvement. Except for the 2-3 year group, more than six months riding experience has a very minimal effect on accident risk.

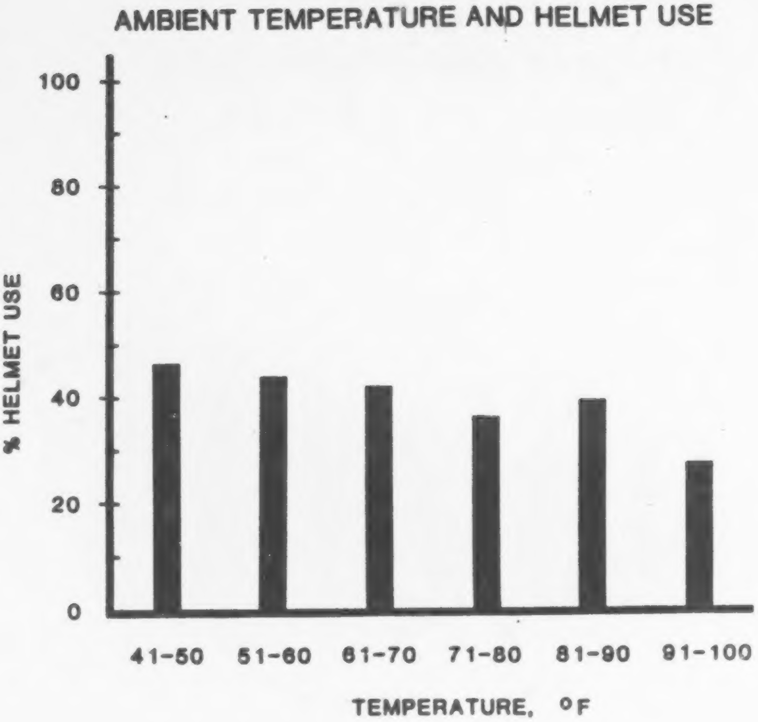
Helmet use (black bars) generally shows a mild trend of increased use with increased riding experience. It is unclear whether the increase in helmet use is due to natural selection or wisdom and caution.

FORMAL EDUCATION
ACCIDENT RISK & HELMET USE



This graph shows how accident risk (gray bars) and helmet use (black bars) vary depending on how much formal education the rider has had. Those with only a partial high school education were at greatly increased risk for accident involvement and were the least likely to be wearing a helmet. Accident risk was significantly lower for those who had completed college, and helmet use increased steadily the more schooling the rider had had.

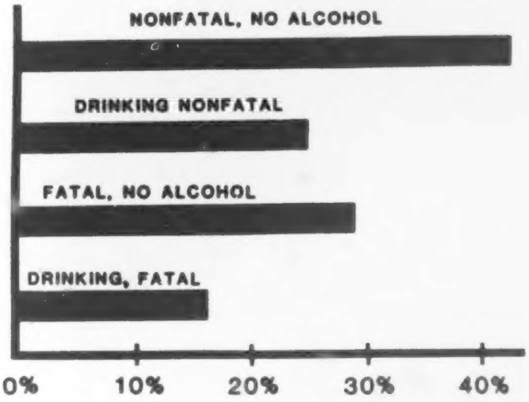
Like trip length, formal education was found to exert a powerful influence on both accident risk and helmet use, far more effect than either age or motorcycle riding experience.



The graph above shows how helmet use varies depending on the outside temperature at the time of the accident. Generally, helmet use tends to decline as temperatures go up, but it really drops off when temperatures go over 90 degrees.

Ironically, motorcycles are a lot more popular in the summer than in the winter, so accidents are more frequent in warm weather. In Los Angeles, motorcycle accidents are about twice as common in summer as in winter.

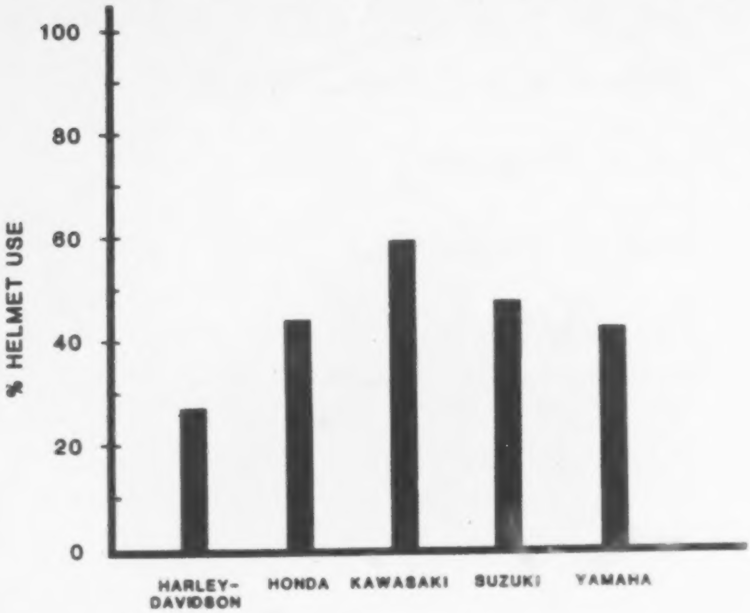
HELMET USE



PERCENT WEARING A HELMET WHEN THEY CRASHED

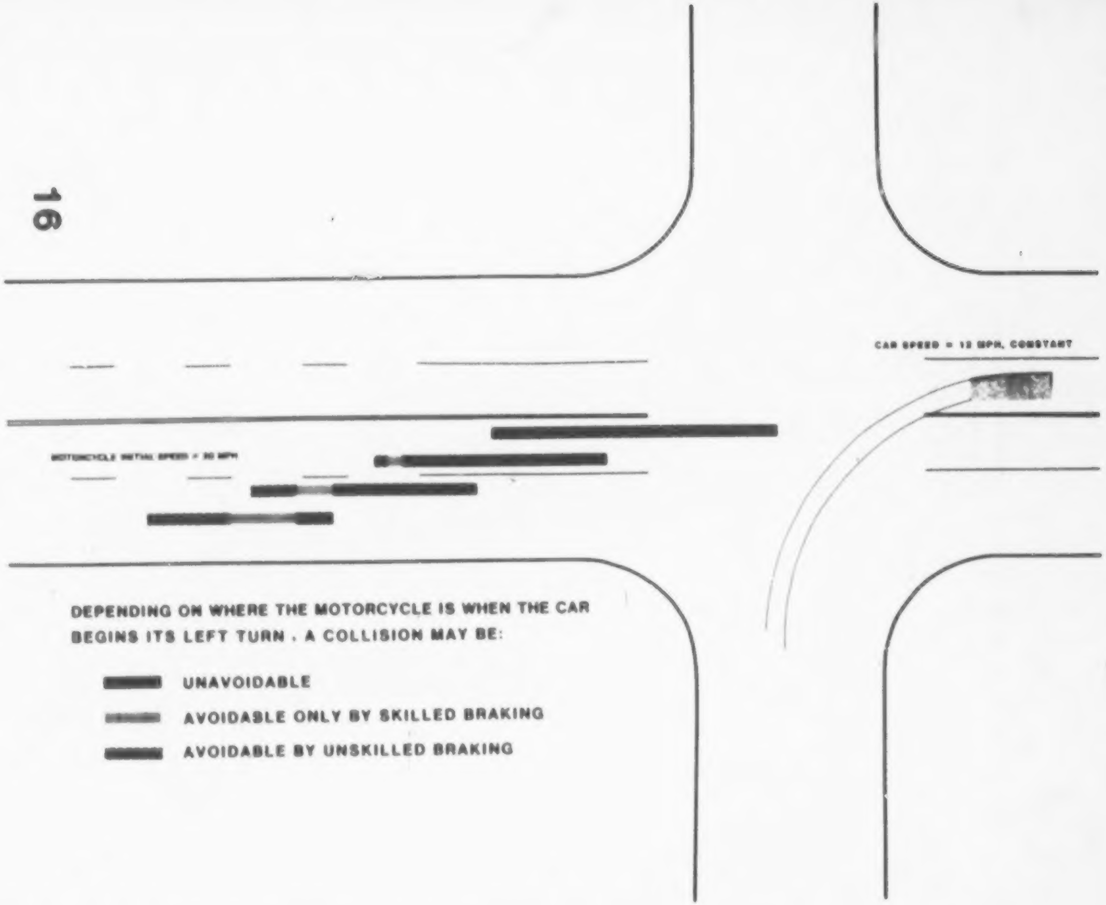
Not surprisingly, helmet use is affected by alcohol consumption. Within the population of nonfatal accidents, drinking riders wore a helmet 60% as often as nondrinkers. Fatally injured riders were less likely to be wearing a helmet than those who survived. Fatally injured drinkers were about 60% as likely to have worn a helmet as nondrinkers who were killed.

MOTORCYCLE MANUFACTURER AND HELMET USE



It turns out that even the kind of motorcycle you ride is related to helmet use. Helmet use was highest for Kawasaki riders, and far below average for riders on Harley-Davidson motorcycles.

16


CAR SPEED = 12 MPH, CONSTANT
MOTORCYCLE INITIAL SPEED = 30 MPH

DEPENDING ON WHERE THE MOTORCYCLE IS WHEN THE CAR BEGINS ITS LEFT TURN . A COLLISION MAY BE:

▬ UNAVOIDABLE
▬ AVOIDABLE ONLY BY SKILLED BRAKING
▬ AVOIDABLE BY UNSKILLED BRAKING

National Conference of State Legislatures

444 North Capitol Street, N.W.
Suite 500
Washington, D.C. 20001
202/624-5400
FAX/202-737-1069

President Samuel B. Nunez, Jr.
Senate President Pro Tem
Louisiana

Executive Director
William T. Pound

STATEMENT OF

SENATOR CHARLES WADDELL

OF VIRGINIA

FOR THE

NATIONAL CONFERENCE OF STATE LEGISLATURES

BEFORE THE

U.S. SENATE

SUBCOMMITTEE ON WATER RESOURCES, TRANSPORTATION AND INFRASTRUCTURE

ON THE

NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989

OCTOBER 17, 1989

Denver Office: 1050 17th Street • Suite 2100 • Denver, Colorado 80265 • 303/623-7800

Mr. Chairman, Members of the Subcommittee, I am State Senator Charlie Waddell. I am appearing before you today on behalf of the National Conference of State Legislatures which represents legislators from the nation's 50 states, its commonwealths and territories.

I appreciate this opportunity to comment on the National Highway Fatality and Injury Reduction Act of 1989. I have been a member of the Virginia General Assembly for 18 years and Chair the Senate Committee on Transportation.

During this time, I have been a strong supporter of state-enforced transportation safety laws. I was the original sponsor of legislation to require seat belt usage, and I continued my support of efforts to adopt mandatory seat belt provisions until we were successful. Virginia's law became effective January 1, 1988.

As a strong advocate of transportation safety, I commend Senator Chafee and members of this Subcommittee for your efforts to address this issue today. The legislation under consideration, which would mandate state laws on seat belts, child restraint devices and motorcycle helmets, while well-intended, unfortunately includes a mechanism for federal sanctions that I cannot endorse.

The states already face the prospect of losing federal-aid highway funds in more than a dozen areas of compliance - some directly related to the highway program and others, at best, tangentially related. This approach has proven to be an anathema to state legislatures who are simply looking for solutions to the same problems recognized by Congress. NCSL has longstanding policy opposing the use of federal sanctions.

The unfortunate reality of attempting to hold states accountable for all unwise, unsafe or unhealthy decisions made by adults, is that the list of risky decisions made by adults every day is endless. Taken to the extreme, perhaps federal drug prevention assistance programs would penalize a state which could not keep its citizens drug-free, which of course would be counterproductive.

A state must be in a position to determine the best utilization of limited resources. Adding to the list of ways in which a state can jeopardize funding for transportation, including safety, only limits the state's ability to find the most effective combination of laws, regulations, and educational efforts to encourage driver and passenger safety.

As I stated earlier, I am a strong advocate of transportation safety measures. I have no intention of arguing the safety consequences of use versus non-use of safety restraints or helmets. I believe the preponderance of the evidence to date comes down convincingly on the side of usage.

What I would like to direct my remarks to are the states' experience in this regard, particularly Virginia's, and the need for federal legislation which encourages effective, albeit varied, state approaches to increasing vehicle safety.

To my knowledge, all 50 states have some type of child restraint laws in effect. At this time, some 34 states and the District of Columbia have mandatory seat belt laws. And while the state record on motorcycle helmet requirements is not as impressive, as many as 47 states at one time have had comprehensive motorcycle helmet laws.

State legislatures began adopting mandatory seat belt laws in 1984, when the New York State Legislature approved a measure requiring all persons operating passenger vehicles to insure that they and their passengers are secured by a safety restraints. The State of New Jersey quickly followed suit, and more recently the State of North Dakota became the 33rd state to adopt a mandatory seat belt law.

Careful examination of the respective laws of the states demonstrates that states have very different approaches to the waivers permitted; the fines assessed; the enforcement mechanism and so on. In Virginia, for example, our law imposes a $25 fine on violators, but exempts postal and newspaper carriers, certain law enforcement officials, and those with medical justification.

We provide for secondary enforcement only; assess no traffic points; prohibit mitigation of damages and include an educational program. While most states incorporate educational efforts, only a few provide for primary enforcement and mitigation of damages.

However, I believe you will note similar statistical findings in the other 33 states, whatever the composition of their respective seat belt laws. A comprehensive effort in this regard appears to be the most effective, but the imposition of federal requirements as to the nature of this effort would surely undermine the states' ability to tailor the seat belt enforcement programs to best address their particular driver population.

I want to expand here on the need for comprehensive safety efforts. I think it is imperative that our attention is placed on end results, not specific means and mechanisms of accomplishment. The grant provisions in S. 1007 in the latter years do this by specifying criteria which acknowledges state improvements in compliance levels.

There are problems inherent to being myopic about the approach taken to improve driver safety. Such was the case over the last few years, when the U.S. Department of Transportation made the inclusion of passive restraint systems in new automobiles dependent on the failure of the states to adopt mandatory seat belt laws.

While there are some advocates of this approach that see this contingency as the motivating factor behind state adoption of seat belt laws, what purpose does it serve to pit complementary safety restraints against one another. California's law specifically recognized that the state's mandatory seat belt statute was intended to complement, not substitute, for any federal requirements for automatic restraints.

Several states, in recognizing this dilemma, purposefully drafted their seat belt legislation so that they could not be counted as being in compliance. Others included a sunset provision to repeal the seat belt law if the Secretary's passive restraint order was rescinded.

For the most part, states have gone beyond the criteria set by former Secretary Dole, with many placing additional requirements on drivers, passengers and vehicles. Most states have educational programs to supplement enforcement efforts as well. Prior to the enforcement of Virginia's law, our drivers had voluntarily doubled their usage rate due to educational efforts.

I do not believe that I could significantly add anything to the testimony presented to this subcommittee on child restraint laws. The fact that all states require children under a certain age to be properly restrained in automobiles certainly speaks to the priority that the state have assigned this safety issue.

I would like to spend the remainder of my time addressing the issue of mandatory motorcycle laws. I can understand where the members of this Subcommittee may have particular concerns in this area.

Congress did, at one time, impose sanctions on states without comprehensive helmet laws. This statute was subsequently altered to only require that such laws were in place for riders under the age of 18.

At its peak, 47 states were in compliance. With the reduction in federal requirements, many states have in turn repealed laws requiring helmets for all riders. The State of Virginia has retained its mandatory helmet law.

However, we have focused much of our efforts on educational activities. The Virginia Rider Training Program had 12 motorcycle rider training centers at the end of 1988 with over 90 instructors. These instructors have trained, on average, over 1,000 riders per year.

Our program allows for the training to be used in lieu of the licensing skills tests. We have found this to be a more efficient use of resources. In the first three years of the VRTP, motorcycle accidents and fatalities have decreased by one-third.

Since the U.S. Highway Act of 1976 eliminated the requirement for states to adopt comprehensive helmet laws for all riders, states have revisited this issue many times.

In this legislative year alone, over half of the state legislatures have had legislation proposed to modify their helmet or restraint laws in some manner. This indicates to me the high priority and attention that states place on this issue.

Any federal legislation should seek to encourage this endeavor - this legislative struggle to find just the right mix of requirements and incentives to result in increased rider safety. In many instances, states are already exploring safety requirements for a variety of vehicles not addressed under any federal legislation or regulation.

The challenge in all cases, however, is in maintaining compliance with all safety standards. There appears to be a leveling off of compliance over time which undermines the intent of the safety requirements.

I hope that Congress will continue to work with the states to complement and supplement ongoing motorist safety initiatives.

As this Subcommittee deliberates on this proposed legislation, I would like to suggest that members of this Subcommittee address this bill as they would a seat belt. In doing so, we can all rest assured that it will be adjusted to fit its intended beneficiaries.

I thank you again for your time and concern.

NAGHSR
National Association
of Governors' Highway Safety Representatives

Peter K. O'Rourke
Chairman
Barbara L. Harsha
Executive Director

Statement of the
National Association of Governors'
Highway Safety Representatives
before the
Subcommittee on Water Resources, Transportation and Infrastructure
of the
Senate Committee on Environment and Public Works

October 17, 1989

I am Paul Jones, Director of the North Carolina Highway Safety Program and Vice Chairman of the National Association of Governors' Highway Safety Representatives (NAGHSR). NAGHSR is a non-profit association which represents the highway safety offices of 49 states, four territories and the District of Columbia. Its members are appointed by the Governor and are responsible for developing and implementing the state's highway safety program. Occupant protection is a major concern of NAGHSR's members and a primary focus of its activities.

The Cost of Motor Vehicle-Related Injuries

I appreciate the opportunity to testify before you on S. 1007, a new federal occupant protection initiative. I am particularly gratified that this Congressional committee has recognized the importance of occupant protection and the need for a federal initiative.

Every year, motor vehicle crashes result in a very large number of deaths and injuries. In 1988, there were 47,093 fatalities in 42,119 fatal crashes and nearly four million injuries. Of the occupants who were reported as unrestrained, 17,570 (nearly half of all motor vehicle-related fatalities) were fatally injured.

The cost of these unintentional injuries is enormous. According to the National Highway Traffic Safety Administration (NHTSA), the costs of all motor vehicle-related death and injuries was $74 billion in 1987. As noted in Injury in America, the cost of motor vehicle crash injuries is second only to those of cancer, among the other leading causes of death. The indirect costs of these crashes are especially high because motor vehicle crash victims are younger, on average, those those suffering from one of the other major diseases and there is a much longer period of post-crash care. More importantly, these cost figures do not account for other individual and societal costs which are more difficult to measure (such as pain and suffering, family disruption, psychological impacts).

444 North Capitol Street Suite [illegible] Washington DC 20001
(202) [illegible]

A large proportion of motor vehicle-related deaths and injuries could have been prevented if vehicle occupants were properly restrained. If all front seat occupants of passenger vehicles had worn safety belts and all motorcycle riders had worn helmets in 1987, then 12,000 lives and $7 billion would have been saved and 437,000 injuries prevented, according to NHTSA.

Effectiveness of Existing Occupant Protection Countermeasures

To date, 34 states and the District of Columbia have occupant protection laws for passenger car occupants. All fifty states, the District of Columbia, and Puerto Rico have child restraint laws, and 22 states have mandatory helmet use laws for all motorcyclists (including the newly-passed Texas law which went into effect last month.) An additional 24 states have mandatory helmet use laws for motorcyclists of a particular age group (e.g. under 18 years).

As a result of state occupant protection initiatives, the use of safety belts has continued to rise. According to the 19-city survey conducted by the National Highway Traffic Safety Administration (NHTSA), belt use among car drivers has risen from 11% in 1982 to 46% in 1989. Reported safety belt use in states with mandatory use laws averages 50%, although use rates vary widely from state to state. Two states -- Maryland and Hawaii -- have reported use rates above 70%. The estimated usage rate for child restraint systems in 1988 was, according to the 19-city survey, 84%.

Numerous NHTSA and state studies have firmly established that occupant protection systems are extremely effective when used (and used correctly), reducing the risk of fatal or serious injury by 40-50% and serious injury by 45-55%. Among the findings of recent NHTSA studies are the following:

- According to the 1987 Fatal Accident Reporting System (FARS), 17,821 restrained passenger car occupants were involved in fatal accidents and 4,500 of those were fatally injured. 35,799 unrestrained passenger car occupants were involved in fatal accidents and 17,246 were fatally injured. In other words, twice as many unrestrained occupants as restrained occupants were involved in crashes in which someone was killed, and more than twice as many unrestrained occupants were themselves killed.

- States with mandatory safety belt use laws have 7% fewer fatalities than those that do not. (A recent analysis of the impact of occupant laws in 24 states and the District of Columbia conducted by a respected North researcher confirmed this finding and also showed that in five states, nonfatal injuries dropped by 10%.)

- Among front seat passenger vehicle occupants over four years old, safety belts saved about 4,500 lives in 1988. From 1983-88, an estimated 15,500 lives were saved by safety belts, primarily because of state safety belt laws.

- Of the passenger car occupants involved in fatal crashes who were reported as restrained, 26.3% were fatally injured, while 49.2% of unrestrained occupants were fatally injured (FARS 1988). Hence, a person's chance of being "saved by the belt" are twice as great an unrestrained person's chances of survival.

- In 1988, child safety seats and safety belts used by children under five saved 26.5 % of those at risk (those who would have been killed if they had not worn the protective devices). NHTSA has estimated that the correct use of child safety seats reduces fatality risk by 67% and serious injury risk by 71%.

- In 1986, an unrestrained person was four times more likely to be ejected from a vehicle than a restrained person. Of those who were ejected, 3 out of four were killed.

Additional NHTSA, state and university studies have also confirmed the effectiveness of motorcycle helmet use and mandatory helmet use laws. Among the findings of these studies are the following:

- A 1986 NHTSA helmet survey in selected cities found a 99.5% use rate in cities in which there were state mandatory helmet use laws and only a 45.9% use rate in no-or-limited law cities. The NHTSA study found that once a law is passed, helmet use rises dramatically because violators are easy to identify and, hence, the law is easy to enforce.

- A 1980 NHTSA study of four states in which the helmet law had been repealed found that the risk of fatal head injuries for motorcyclists in those states was 2.5% - 6.9% greater after the helmet laws were repealed than before repeal.

- A 1988 Texas Department of Public Safety study compared the post-crash experiences of helmeted and non-helmeted riders during a nineteenth month period by examining hospital trauma registry, licensing, accident, and other data. The authors found that four out of five motorcyclists who died were not wearing helmets, that the non-helmeted rider had more serious injuries than those with helmets, that the non-helmeted rider spent more days in the hospital and were more likely to have no medical insurance.

- A 1989 NHTSA study using 1982-87 FARS data found that motorcycle helmets are estimated to be 29% effective in preventing fatalities. The study found that 4,645 lives were saved by helmet use during that period, based on a nationwide use level of about 60%. If helmets were used 100% of the time, an estimated 9,030 lives could have been saved during this time period.

Need for a Federal Occupant Protection Initiative

Despite the proven effectiveness of current occupant protection and motorcycle helmet use laws, the laws have not had as great an impact on injuries and deaths as needed.

There are many factors which contribute to this phenomenon. Most states, for example, implement their safety belt laws through secondary enforcement (a law enforcement official may address a safety belt violation only if the driver has been stopped for another driving offense) rather than primary enforcement (a law enforcement official may stop a driver solely on the basis of a safety belt violation). Many state safety belt laws exempt particularly classes of users (e.g. federal, state or local employees, rear seat passengers) or vehicles (e.g. light trucks and vans, taxicabs). Some states do not enforce their safety belt laws as vigorously or effectively as others, and other states do not implement the kind of combined education and enforcement programs which proved so effective in Elmira, NY. Finally, many passenger car occupants do not use the safety belts or child safety seats correctly which can significantly reduce the effectiveness of those occupant protection systems.

It is likely that more and more states will pass occupant protection and motorcylce helmet laws in the future. But these efforts take time, which means that more people will be killed, more injured, and greater societal and economic costs will be incurred. In order to hasten state passage of the occupant protection and motorcycle helmet laws and to encourage states with those laws to strengthen them, NAGHSR believes that a new federal incentive program is needed.

Merits of Sanctions and Incentives

NAGHSR strongly supports performance-based incentives and is very gratified that such an innovative incentive program has been included in the bill. Incentives encourage a state to act but do not penalize the state for failure to do so. Performance-based standards or criteria give state highway safety agencies the flexibility to address national highway safety goals in a way best suited to state needs and resources. Performance-based criteria encourages rather than discourages innovative state solutions to highway safety problems. As a result, many states are likely to satisfy the criteria and seek grant eligibility.

We submit that the 408 program (23 U.S.C 408) has not been an effective program because it mandates the states to satisfy a number of very specific criteria in order to eligible for the grant. Between 1982-88, only seventeen states qualified for the program and only about $24 million of the authorized $125 million had been spent. Only recently, when NHTSA loosened the eligibility criteria, did additional states qualify for the grants. If the 408 program had been structured along the lines of the proposed incentive grant program, we feel that many more states would have been able to participate in it.

We believe that performance-based incentive programs are just as effective as sanctions, if not more so. NAGHSR feels that the incentive grant portion of S. 1007 is so well crafted that it may be a model for other highway safety incentive grant programs, and we commend Senators Chafee, Moynihan, and Wilson for having the foresight and leadership to introduce such a program.

NAGHSR and many other state associations strongly oppose the use of sanctions to achieve a program objective. We believe that sanctions are counterproductive and can lead to inadvertent consequences. Withholding a state's highway construction funds, as is proposed under S. 1007, could, in our view, exacerbate highway safety problems by preventing a state from rehabilitating deteriorating pavement, adding capacity, or making other engineering improvements which would improve the safety of the highways.

We also believe that sanctions are not properly targeted to the state or local entity that is responsible for the failure to enact the mandated requirements. Under S. 1007, a state transportation agency would be penalized for a law that its state legislature may have failed to enact, or its state or local law enforcement agency may have failed to enforced. Not only is this inequitable, but it is also an ineffective way to influence state behavior. NAGHSR strongly urges the Subcommitee to delete the sanctions provisions of S. 1007.

Additional Comments on S. 1007

NAGHSR strongly supports the specific performance-based criteria proposed under S. 1007. We believe that the criteria are stringent enough to encourage states to improve their occupant protection and motorcycle helmet laws but not so stringent as to discourage states from participating in the program. We like the way the criteria become more difficult to attain in the outyears so that states are encouraged to continue to strengthen their occupant protection programs in order to qualify for additional funds.

We also support the proposed funding level as well as the source of funds for the incentive program. A significantly lower funding level would be an insufficient incentive to the states to participate in the program. We recommend that language be added to the proposal which would require the National Highway Traffic Safety Administration to promulgate, on an expedited basis, draft and final rules implementing the incentive program. Eligible states would not have to loose a year before they could receive funds, as they have under the newly authorized 410 drunk driving prevention incentive grant program (23 U.S.C. 410).

We further support the proposed $5 million occupant protection and motorcycle safety education and information program. These funds are needed to supplement the programs already underway at NHTSA, to focus attention on the correct use of child safety seats, and to continue to encourage motorcycle helmet use. With the mass introduction of airbags in the passenger fleet this year, the public may become confused about the need for both passive and automatic occupant protection systems. The $5 million educational funds can help send the message that maximum protection is provided if both types of systems are used together.

NAGHSR believes that a 50% state matching share for the incentive grants is too high, which may preclude many states from participating in the incentive program. We recommend that the federal matching share under the incentive grant program should parallel the matching share for 402 State and Community Highway Safety grants (23 U.S.C. 402). That is, there should be a declining federal matching share (75%, 50%, 25%) over the three year life of the grant program, and any project that is funded under the program would be expected to become self-sufficient by the end of the third year. This would make the incentive grant program consistent with the basic highway safety grant program, maintain the "seed money" concept which underscores the 402 highway safety grant program, and facilitate program administration. It would also facilitate, at least to some extent, state involvement in the grant program by reducing the level of funds that must be offered by the state in the initial year of the grant. This approach has worked well under the 402 program, and we believe it would work well under the incentive grant program.

Further, we recommend that the incentive grant program should be authorized for five years instead of three years (just as the basic grant program should be). This would encourage long-range planning and implementation of occupant protection programs and would give some stability to the incentive grant program.

NAGHSR also recommends that state recipients of the incentive grant funds should be required to spend a portion of their second through fifth year grant funds on the development and implementation of accurate and representative belt use surveys. NHTSA has indicated that it will offer technical assistance to states to help them develop accurate and representative surveys and that it will accept any surveys that meet those two criteria. Without accurate surveys, it is very difficult to tell how effective state occupant protection and motorcycle helmet programs are and how much progress has been made in reaching state and federal occupant protection goals.

We also suggest that, in addition to the eligible activities specified in the bill, states should be allowed to use their incentive grant funds for occupant protection information and education programs for the worksite, combined enforcement and education programs (such as the one implemented in Elmira), occupant protection and motorcycle safety training programs for health professionals and educators, and development of motorcycle training and licensing materials. We believe these activities would supplement and enhance the eligible activities already outlined in S. 1007.

Finally, we recommend that same program administrative and evaluation requirements that apply to 402 grants should also apply to the incentive grant funds, to the extent possible. We suggest that states be given the option of either submitting a separate application for the incentive grant funds or incorporating the grant application into the Highway Safety Plan (HSP) which the states are required to submit prior to the start of each fiscal year in order to receive 402 funds. This would greatly facilitate program administration and would encourage states to take a more coordinated approach to highway safety within their borders.

Conclusion

In summary, NAGHSR strongly supports the incentive grant portion of S. 1007 and believes that it may be a model for future highway safety grant programs. We do not support the sanctions provisions and urge that they be deleted from the bill. The organization has expressed its position on the proposal in a resolution (see attachment) which was adopted by the membership at our annual meeting in Tulsa, Oklahoma last month.

I very much appreciate the opportunity to testify on a legislative matter that is of great importance and interest to my organization. I wish to again commend the bill's co-sponsors for showing their concern about occupant protection and motorcycle safety and for having the leadership to introduce such an innovative proposal. I would be glad to answer any questions the Subcommittee members may have.

FEDERAL OCCUPANT PROTECTION INITIATIVE

WHEREAS, numerous federal and state studies have shown that occupant restraints and motorcycle helmets are effective in reducing the incidence of death and injury on our nation's highways; and

WHEREAS, a federal occupant protection initiative (S. 1007) has been proposed by Senator John Chafee (RI) that would encourage states to enact mandatory safety belt use and motorcycle helmet use laws, fund enforcement training, and fund safety belt and helmet use education programs; and

WHEREAS, the incentive grant portion of this proposal offers an encouraging opportunity to promote occupant protection systems, motorcycle helmet use and other highway safety initiatives.

NOW THEREFORE BE IT RESOLVED THAT the National Association of Governors' Highway Safety Representatives (NAGHSR) commends Senator Chafee for his interest in occupant protection and for introducing national occupant protection legislation; and

BE IT FURTHER RESOLVED THAT NAGHSR strongly supports the incentive grant portion of S. 1007, and recommends that the following amendments should be made to strengthen the bill and make it more consistent with other federal highway safety grant programs:

- the incentive grant program should be authorized for five years;
- the federal matching share for incentive grants should be the same as the 402 program (23 U.S.C. 402);
- state recipients of incentive grant funds should be required to spend a portion of their second through fifth year grant funds on the development and implementation of accurate and reprepresentative belt use surveys;
- states should be allowed to use incentive grant funds for: police training and enforcement programs (including motorcycle training and enforcement), community education and information programs, worksite programs, combined enforcement and education programs, health worker and educator training programs, and motorcycle training and licensing materials;
- states should be required to utilize the same program planning and evaluation process for the occupant protection incentive grant funds as they do for 402 highway safety grant funds.

BE IT FURTHER RESOLVED THAT NAGHSR strongly urges Senator Chafee to delete the sanctions from S. 1007 so that states are encouraged to passed occupant protection and helmet use legislation but are not penalized for failing to do so.

Statement of

Charles L. Spilman, President

TRAFFIC SAFETY NOW, INC.

to

Hearing of the

Senate Subcommittee on

WATER RESOURCES, TRANSPORTATION

AND INFRASTRUCTURE

on

Senate Bill 1007

"National Highway Fatality and Injury Reduction Act of 1989"

October 17, 1989
Washington, D.C.

Thank you for the opportunity to testify here today. My name is Charles Spilman and I am president of Traffic Safety Now, Incorporated -- TSN.

I've come here today to state TSN's support for Senate Bill 1007 -- the National Highway Fatality and Injury Reduction Act of 1989. We support this bill because our experience has shown that state safety-belt-use laws are the most effective way to save lives and reduce injuries on our highways. In addition, TSN recognizes the lifesaving benefits of motorcycle-helmet laws.

TSN was founded in 1984 by the domestic automobile manufacturers -- Chrysler, Ford, General Motors and American Honda. It includes the active participation of the Automotive Occupant Restraints Council, the Motor Vehicle Manufacturers Association and the National Automobile Dealers Association.

TSN was formed in response to a call by then-Secretary of Transportation Elizabeth Dole for a joint public and private effort to educate people about the benefits of safety-belt use. TSN's main goal was, and still is, to increase safety-belt use by encouraging states to pass strong belt-use laws.

TSN has spent the last five years doing exactly that. We have developed a network of coalitions in all 50 states and the District of Columbia and we enjoy the support of more than 500,000 volunteers.

With me today are Robin Markowitz, executive director of the TSN coalition in New York -- the first state to pass a belt-use law -- and Sharon Brinkworth, executive director of the TSN coalition in Rhode Island -- one of the 16 states remaining that are working toward passing a belt-use law.

Robin and Sharon are just two of the many people who have dedicated themselves to helping TSN reach its ultimate goal of 100 percent belt use in the United States.

During the past five years, we have helped to pass belt-use legislation in 34 states plus the District of Columbia and have conducted a variety of public-information and law enforcement programs in every state. During this period:

- The national safety-belt-use rate has increased nearly 400 percent from just 12 percent in 1984 to 47 percent today;
- Belt-use is 40 percent higher in states with laws than in states without laws; and,
- 86 million more people are buckling up on U.S. roads and highways today than were prior to the first belt-use law.

The impact these laws have had on traffic safety also is staggering:

- More than 15,200 lives have been saved by safety belts. 10,300 due directly to belt-use legislation;
- Experts estimate more than 100,000 serious and moderate injuries are being reduced annually as a result of belt-use legislation; and,
- Billions of dollars in medical expenses, lost productivity and other related costs have been saved because of decreased fatalities and injuries.

These facts and figures prove the benefits of safety-belt-use and help to explain why some traffic-safety experts have called the safety-belt-use law "one of the greatest advancements in traffic-safety history."

TSN supports the grant program provided for in this bill. We feel it will encourage the 34 states and the District of Columbia which have taken the initiative to pass safety-belt-use laws to further intensify their efforts to increase use rates.

We recognize and support the annual belt-use-rate goals established for states in this legislation. We also agree that community-based programs to educate the public and encourage enforcement of belt-use laws are important provisions in this bill. As an added footnote, we also would support mandating safety-belt use for occupants in trucks and vans.

Despite the progress we have made, we still have a long way to go in increasing belt use in the United States. Experts estimate that if all motorists would buckle up, as many as 10,000 more lives could be saved annually and thousands of injuries could be mitigated. Even with the dawning of air bags and other passive-restraint technology, it is imperative that all Americans recognize the importance of buckling up.

Extending the protection offered by safety-belt-use laws to all Americans is certainly achievable. We believe this bill will help us reach this goal. We hope the incentives contained in Senate Bill 1007 will provide the momentum needed to get belt-use laws enacted in the remaining 16 states.

At this point, I'd like to take a few minutes to discuss public opinion.

TSN has sponsored surveys in more than 30 states as well as five major national surveys. We've found more than 75 percent of Americans favor safety-belt-use laws and support strict enforcement of the laws. In five years, support for belt-use laws has increased. Today more than ever, people believe in the life-saving benefits of buckling up.

Belt-use legislation is popular in states with and without a law on the books. TSN's most recent national survey indicates nearly 70 percent of the people who live in states without a safety-belt law support the passage of such legislation. That's considered a mandate when it comes to most public-policy issues, but in this case, legislators in 16 states have yet to positively respond to their constituents.

However persuasive the public-opinion, fatality and injury-reduction figures are, they are not the most potent argument to illustrate the reason why Senate Bill 1007 should be passed. The determining factor is -- and should be -- the human element.

I'd like to take a moment to relate an incident which occurred after California's safety-belt-use law went into effect.

Four teenagers in a car were speeding on a California highway when a state patrolman pulled them over. When the patrolman approached the car, he saw that all of them were in violation of the state's safety-belt-use law. He ticketed the driver for excessive speed and told all of the occupants to comply with the state law and buckle up. All of them did.

An hour or so later, this patrolman received a call on his radio -- there had been a terrible accident on the same highway. He drove to the scene only to see the car he had pulled over shortly before.

The car had been crushed, and there was little hope anyone had survived. He walked to the car and was greeted by all four of the teenagers he had told to buckle up. Each of them thanked the officer and admitted they wouldn't have buckled up if he hadn't pointed out that it was the law.

These four survivors should be the determining factor as to why this legislation is needed. As pointed out earlier, they are not alone. Since 1983, more than 15,200 other people have had firsthand experience demonstrating the importance of buckling up.

We thoroughly support Senate Bill 1007 and particularly express our appreciation to Senators Chafee and Wilson for their leadership in introducing this important highway-safety legislation. We are confident this bill will motivate the 16 states without a belt-use law to pass effective legislation in the near future. We also believe it will further increase state efforts to raise belt-use rates.

Thank you for your attention. I will answer to the best of my ability any questions the subcommittee members have.

* * *

II

101st CONGRESS
1st Session

S. 1007

To amend title 23, United States Code, regarding the reduction in apportionment of Federal-aid highway funds to certain States, and for other purposes.

IN THE SENATE OF THE UNITED STATES

May 16, (legislative day, January 3), 1989

Mr. Chafee (for himself and Mr. Wilson) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

---

A BILL

To amend title 23, United States Code, regarding the reduction in apportionment of Federal-aid highway funds to certain States, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Section 1. This Act may be cited as the "National Highway Fatality and Injury Reduction Act of 1989".

Sec. 2. Chapter 1 of title 23, United States Code, is amended by adding at the end thereof the following new sections:

"§ 159. Motorcycle helmets and safety belts

"(a)(1) The Secretary shall withhold 5 per centum of the amount required to be apportioned to any State under each of sections 104(b)(1), 104(b)(2), 104(b)(5), and 104(b)(6) of this title on the first day of fiscal year 1992, if it is lawful in that State for any person—

"(A) to operate or ride a motorcycle without wearing a motorcycle helmet;

"(B) to occupy a front seating position in a passenger car without using a safety belt or child safety restraint while the vehicle is in forward motion; or

"(C) to act both as described in (A) and as described in (B).

"(2) The Secretary shall withhold 10 per centum of the amount required to be apportioned to any State under each of sections 104(b)(1), 104(b)(2), 104(b)(5), and 104(b)(6) of this title on the first day of each fiscal year succeeding fiscal year 1992, if it is lawful in that State for any person—

"(A) to operate or ride a motorcycle without wearing a motorcycle helmet.

"(B) to occupy a front seating position in a passenger car without using a safety belt or child safety restraint while the vehicle is in forward motion; or

"(C) to act both as described in (A) and as described in (B).

"(b)(1) Any funds withheld under this section from apportionment to any State on or before September 30, 1993, shall remain available to such State as follows:

"(A) If such funds would have been apportioned under section 104(b)(5)(A) of this title but for this section, such funds shall remain available until the end of the fiscal year for which such funds are authorized to be appropriated.

"(B) If such funds would have been apportioned under section 104(b)(5)(B) of this title but for this section, such funds shall remain available until the end of the fiscal year following the fiscal year for which such funds are authorized to be appropriated.

"(C) If such funds would have been apportioned under section 104(b)(1), 104(b)(2), or 104(b)(6) of this title but for this section, such funds shall remain available until the end of the third fiscal year following the fiscal year for which such funds are authorized to be appropriated.

"(2) If, before the last day of the period for which funds withheld under this section from apportionment are to remain available for apportionment to a State under paragraph (1), the State makes effective a law which is in compliance with subsection (a), the Secretary shall on the day following the effective date of such law apportion to such State the funds remaining available to such State that had been withheld under the subsection.

"(3) Any funds apportioned pursuant to paragraph (2) shall remain available for expenditure as follows:

"(A) Funds apportioned under section 104(b)(5)(A) of this title shall remain available until the end of the fiscal year succeeding the fiscal year in which such funds are so apportioned.

"(B) Funds apportioned under section 104(b)(5)(B) of this title shall remain available until the end of the second fiscal year succeeding the fiscal year in which such funds are so apportioned.

"(C) Funds apportioned under section 104(b)(1), 104(b)(2), and 104(b)(6) of this title shall remain available until the end of the third fiscal year succeeding the fiscal year in which such funds are so apportioned.

Sums not obligated at the end of such period shall lapse or, in the case of funds apportioned under section 104(b)(5) of this title, shall lapse and be made available by the Secretary for projects in accordance with section 118 of this title.

"(4) If, at the end of the period for which funds withheld under subsection (a) of this section from apportionment are available for apportionment to a State under paragraph (1), the State has not made effective a law which is in compliance with the applicable subsection, such funds shall lapse or, in the case of funds withheld from apportionment under section 104(b)(5) of this title, such funds shall be made available by the Secretary for projects in accordance with section 118 of this title.

"(5) No funds withheld under this section from apportionment to any State after September 30, 1994, shall be available for apportionment to such State.

"§ 160. Motorcycle Helmet and Safety Belt Incentive Grant Programs

"(a) Subject to the provisions of this section, the Secretary shall make grants to those States which adopt and implement effective programs to increase traffic safety by ensuring that persons riding on motorcycles wear helmets and receive adequate rider training and that persons riding in other motor vehicles not only use safety belts and child safety restraints but use them correctly. Such grants may only be used by recipient States to implement and enforce such programs.

"(b) No grant may be made to a State under this section in any fiscal year unless the State enters into such agreements with the Secretary as the Secretary may require to ensure that such State will maintain its aggregate expenditures from all other sources for motorcycle safety programs, safety belt programs and child passenger safety programs at or above the average level of such expenditures in its two fiscal years preceding the date of enactment of this section.

"(c) No State may receive grants under this section in more than three fiscal years. In any fiscal year, the Federal share payable for any grant under this section shall not exceed 50 per centum of the cost of implementing and enforcing the programs under the grant.

"(d) Subject to subsection (c), the amount of a grant made under this subsection to any State which is eligible for a grant under subsection (e)(1) shall equal 30 per centum of the amount apportioned to the State for fiscal year 1989 under section 402 of this title.

"(e)(1) A State is eligible for a first-year grant if the State—

"(A) requires each person occupying a front seating position in a passenger car to use a safety belt or child safety restraint correctly;

"(B) requires each person riding on a motorcycle to wear a motorcycle helmet;

"(C) provides for a comprehensive community-based program to educate the public about motorcycle safety and safety belt and child safety restraint use, involving public health and education agencies, hospitals, and related organizations;

"(D) provides for a statewide police training program on the enforcement of helmet use requirements and safety belt and child safety restraint use requirements; and

"(E) provides for the monitoring of helmet use and safety belt use rates by methods that provide a measure of statewide usage.

"(2) A State is eligible for a second-year grant if the State—

"(A) meets the requirements of subsection (e)(1);

"(B) achieves a helmet use rate of 75 per centum and a safety belt use rate for front seat occupants of 50 per centum.

"(3) A State is eligible for a third-year grant if the State—

"(A) meets the requirements of subsection (e)(1); and

"(B) achieves a helmet use rate of 85 per centum and a safety belt use rate for front seat occupants of 70 per centum.

"(f) There is authorized to be appropriated to carry out this section $25,000,000 for fiscal year 1991 and $35,000,000 per fiscal year for each of fiscal years 1992 and 1993, all out of the Highway Account of the Highway Trust Fund. Such sums shall remain available until expended. Approval by the Secretary of a grant with funds authorized by this subsection shall establish a contractual obligation of the United States for the payment of such grant."

SEC. 3. There is authorized to be appropriated to carry out public education and information activities in support of State and community motorcycle safety and safety belt and child safety restraint use programs $5,000,000 for fiscal year 1990, out of the Highway Account of the Highway Trust Fund. Such sums shall remain available until expended. Approval by the Secretary of Transportation of the payment of such sums shall establish a contractual obligation of the United States to pay such sums.

SEC. 4. The Secretary of Transportation may issue regulations to implement section 411 of title 23, United States Code.

○

Statement of
Dennis Tipton, President
ABATE OF NORTH DAKOTA

to

Hearing of the
Senate Subcommittee on
WATER RESOURCES, TRANSPORTATION
AND INFRASTRUCTURE

on

Senate Bill 1007
"National Highway Fatality and Injury Reduction Act of 1989"

November 13, 1989
Bismarck, North Dakota

ABATE
OF NORTH DAKOTA
AMERICAN BIKERS AIMING TOWARD EDUCATION
P.O. BOX 383 • BISMARCK, NORTH DAKOTA 58502 • (701) 223-5608

ABATE of North Dakota would like to go on record as being against Senate Bill 1007. Understand that we are not against safety, but we feel that mandatory safety laws are not the answer.

ABATE of North Dakota (American Bikers Aiming Toward Education) was formed in late 1974 to unite motorcyclists to fight legislation that was restrictive to motorcyclists and their machines. Mandatory helmet laws have always been one of our major concerns.

In 1977, ABATE was able to get North Dakota law rescinded to mandatory helmets for those 17 and under, which coincides with federal mandate.

We believe education is the best answer to safety. In 1979, we helped put together a bill adding $5 on to each motorcyclist's annual registration fee to be set aside for motorcycle rider education specifically.

This bill was passed and administered through the Department of Public Instruction and contracted through the North Dakota Safety Council. As ABATE members took more interest in education, some became certified instructors and ABATE was given the statewide contract.

In 1982, motorcycle fatalities peaked in North Dakota at 20; by 1984, fatalities were down to 7 and have been under 10 ever since. As of November 18, 1989, North Dakota has had only one motorcycle fatality for the year.

ABATE has taught approximately 9,000 students through the motorcycle rider training program in the last nine years. These are free courses and a motorcycle is provided for the beginner's course. Not one of these students, to the best of our knowledge, has become a motorcycle fatality.

Similar proof that rider education is working exists across the United States. In addition, the motorcyclists themselves are supporting and teaching these courses.

In closing, we ask that you vote against Senate Bill 1007. Mandatory safety measures should be left at the state level where they can be readily monitored and updated as necessary.

Respectfully,

ABATE of North Dakota

STATEMENT

OF THE

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS

BEFORE THE

SENATE SUBCOMMITTEE ON WATER RESOURCES,
TRANSPORTATION, AND INFRASTRUCTURE

REGARDING

S. 1007 -- THE NATIONAL HIGHWAY FATALITY AND
INJURY REDUCTION ACT OF 1989

October 17, 1989

Mr. Chairman and members of the Committee -

The American Academy of Orthopaedic Surgeons is pleased to have the opportunity to provide testimony in support of legislation which would encourage States to implement and enforce helmet and seat belt laws.

By way of background, the Academy was founded in 1933 and is the largest organization of musculoskeletal specialists in the world, with a current membership of over 14,000 Fellows. The Academy is devoted to providing educational opportunities to its membership and increasing public awareness of the impact of musculoskeletal disease and injury and the role of the orthopaedist in their prevention and management.

In an effort to increase public awareness regarding the use of seat belts, the Academy has published, since 1984, a patient education brochure titled, "Why Seat Belts." The 1988 revised edition includes updated statistics and illustrations of the first (vehicle impact) and "second" (human impact) collisions involved in automobile accidents. Sections deal with proper use of seat belts and head rests, seat belts and children, seat belts and pregnant women, and common myths about seat belts that we must overcome through education.

The American Academy of Orthopaedic Surgeons has taken the following position regarding the use of helmets and safety belts:

The Academy endorses laws mandating the use of helmets by motorcycle drivers and passengers.

Orthopaedic surgeons, the medical specialists most often called upon to treat injuries to motorcyclists, believe a significant reduction in fatalities and head injuries could be effected through the implementation of laws mandating the use of helmets by all motorcycle drivers and passengers.

Numerous studies in various parts of the United States have shown that helmet use reduces the severity and cost associated with injuries to motorcycle riders. Federal efforts beginning with the Highway Safety Act of 1966 achieved the passage of state laws mandating helmet use and by 1975, 47 states had enacted such laws. However, the Highway Safety Act of 1977 relaxed the pressure on states to have helmet laws and within three years 27 states had repealed their helmet laws.

The repeal of helmet laws in many states was based on issues involving some motorcyclists' claims that mandatory use laws infringed on their right to personal freedom. While it can be argued that state laws mandating that motorcyclists be licensed to operate the vehicle are a similar infringement, the more important issue is the cost borne by society when a motorcyclist is injured in an accident. Numerous studies have shown that in cases involving motorcyclists who were not wearing helmets, head injuries were more severe, requiring longer, more expensive hospitalization and rehabilitation. Moreover, it has been shown that the public at large bears a major portion of these increased costs, both in the cases where the injured patients' insurance does not cover all the costs associated with care and through the increasing cost of medical insurance premiums.

For example, a study of 105 motorcyclists treated at the Seattle, Washington Haborview Medical Center in 1985 showed that less than 1 percent of all costs incurred in their care were paid for by the patients and their families. More than 63 percent were covered by public funds, with Medicaid covering more than half of all charges.

Direct costs for the patients studied totaled more than $2.7 million, an average of $25,764 per patient. It should be noted that the study followed up the patients for a mean of 20 months and also considered subsequent costs of readmission for treatment of acute problems, home care, and rehabilitation.

The Academy strongly endorses the view that all motorists should be required by law to wear safety belts.

For more than two generations motor vehicle accidents have been a major cause of death and injury in this country. Most fatalities from automobile injuries can be prevented by safely restraining passengers. The safety belt is the most effective safety device available to every motorist because it prevents the second collision. The first collision occurs when a car strikes an object. But death or injury occurs most frequently from the second "human" collision of the occupant against the interior of the vehicle or through ejection from the vehicle. Ejection from a crashed vehicle increases the risk of fatal injury ten times more often to unrestrained occupants.

Since 1967, federal law has required that all cars and light trucks sold in the United States be equipped with safety belts but, tragically, they are used by less than half (46 percent) of all motorists. According to National Highway Traffic Safety Administration statistics, in states without safety belt laws, only one in three drivers (34 percent) use safety belts. In states with safety belt laws, about 50 percent of the drivers use safety belts. Educational campaigns over the past 20 years, utilizing the most sophisticated educational and communications methods, have failed to convince even a simple majority of motorists that it is smart to take their lives in their own hands and fasten the safety belt.

Clearly highway carnage is a problem of great consequence for this country and must be attacked by a combination of mandatory safety belt and helmet legislation and a thoughtfully conceived and implemented educational campaign. The American Academy of Orthopaedic Surgeons has been committed to this type of education for many years. The fellows or members of our Academy have distributed nearly 2 million of our brochures on safety belts, as well as other materials. We would like to encounter fewer and fewer trauma patients in the emergency room. Federal encouragement of mandatory safety belt and motorcycle helmet laws can help meet that objective.

The Academy commends the Subcommittee for its interest in this vital public safety issue and appreciates the opportunity to present its views.

STATEMENT OF THE AMERICAN INSURANCE ASSOCIATION

STATEMENT OF THE
AMERICAN INSURANCE ASSOCIATION
IN SUPPORT OF S.1007

David F. Snyder
Counsel and CPCU
American Insurance Association
1130 Connecticut Avenue
Suite 1000
Washington, D.C. 20036

(202) 828-7100

American
Insurance
Association

The American Insurance Association is a national
trade organization of casualty insurers.

PROFILE

The American Insurance Association is a full-service trade organization of casualty insurance companies. In its present form, the association combines three earlier organizations. One of those, the former National Board of Fire Underwriters, was organized in 1866, making it one of the oldest trade associations in the nation.

The various departments provide members with up-to-date intelligence on legislative, regulatory, judicial and technical developments relating to our industry. The AIA also maintains liaison with insurance regulators, federal and state lawmakers, other state and federal government officials, insurance and non-insurance industry groups and media—supplying information and assistance on issues of mutual concern.

A countrywide system of regional offices and local legislative counsel ensures prompt and rigorous attention to casualty insurance matters. At the same time, technical specialists from disciplines as diverse as law, economics and engineering educate members and outside publics on developments that may affect the industry and its services to the insurance-buying public.

STATEMENT OF THE AMERICAN INSURANCE ASSOCIATION IN SUPPORT OF S.1007

David F. Snyder
Counsel and CPCU
American Insurance Association
1130 Connecticut Avenue
Suite 1000
Washington, D.C.   20036

(202) 828-7100

STATEMENT OF THE
AMERICAN INSURANCE ASSOCIATION
ON
S.1007

It is no secret that in some states and in some urban areas in other states, automobile insurance rates have been increasing rapidly. Highway accident deaths are starting to climb once again, which will add even further pressure on auto insurance rates. The costs relating to auto accident injuries are skyrocketing. From 1983-1988, average bodily injury liability losses, which reflect lawsuit and health care costs, have increased 71.3%. This is a far greater increase in losses than has been recorded for property damage coverages. Clearly, there is an urgent need, both from the public health standpoint and from the automobile insurance standpoint, to do everything we can to prevent accidents in the first place, and to reduce injuries that result from accidents.

The United States Senate has already acted this session on the most important legislation it can pass on highway safety, S.673. This bill passed the Senate unanimously and has the strong support of consumer groups and insurance groups. S.673 will require that mini vans and light trucks meet the same safety standards that apply to other family vehicles, that side impact standards be improved, and that 5 mph bumpers once again be the rule, rather than the exception. This, or similar, legislation ought to be passed by the House of Representatives as soon as possible.

S.1007 addresses two additional highway safety issues:

motorcycle safety and seatbelt use. Combined with S.673, S.1007 will help to form a comprehensive remedy both for the highway safety problem and for increasing automobile insurance rates.

Motorcycles

The number of deaths per 100,000 registered motorcycles is 79 compared to 18 for registered passenger cars. Per person-mile traveled, the number of deaths on motorcycles is about 17 times the number in cars. Tragically, these higher than average losses affect predominantly young wage earners in the 16-34 year old category. Based on research, more than 500 excess deaths occurred in 1980 in the 28 states that repealed or weakened their motorcycle helmet use laws since 1976. The total economic cost in 1980 alone was estimated at $180,000,000.

Helmet use laws have reduced deaths and injuries among cyclists, resulting in substantial savings to society in terms of economic loses. Some of these losses are insured losses, and we, along with the rest of the public, have an interest in reducing losses so that insurance rates can be stabilized.

For those who believe that the issue involves an encroachment on personal freedom, I need only recall a recent rally against the Pennsylvania motorcycle helmet law. Hundreds of cyclists gathered on the front steps of the Capitol for a day-long rally against the helmet use law in that state. Later that night, on the way home from the rally, one of the participants, while not wearing a helmet, was killed in a single vehicle motorcycle accident. Because he exercised the so-called "right" not to wear a helmet, he, like so many others, will not have another opportunity to exercise such truly fundamental rights as petitioning the government. We support the bill's provision on motorcycle helmet laws.

Seatbelt Use

The second issue dealt with in S.1007 is mandatory seatbelt use laws. Although cars are coming off the assembly line with airbags in record numbers and with automatic seatbelts, many of these seatbelts can still be detached. Further, it will be many years before the present auto fleet is fully replaced by the safer models.

The evidence is strong that, in states with primary enforcement mandatory seatbelt laws, deaths and injuries are significantly reduced. Between 1983 and 1987, seatbelt use laws saved an estimated 6,900 lives.

We recognize that there are limitations to seatbelt laws. For example, research has shown that the most accident prone segments of the population tend not to wear seatbelts, law or no law. Also, seatbelts may not help in high speed collisions, or some designs may not be as effective as possible. Nonetheless, where a primary enforcement law is vigorously enforced and there is a public information program, there are tangible benefits in the reduction of deaths and injuries on the highways.

Many states have adopted seatbelt laws, but many of them are frankly too weak, being of the secondary enforcement type. In these states, a violator cannot be charged unless charged with another offense. It is therefore essential that these laws be strengthened and that states without seatbelt laws enact such laws.

Seatbelts are particularly effective in low speed collisions, the kind of accidents that happen frequently in congested urban areas. It is precisely in some of these urban areas where insurance rates are the highest and where political pressure for a disasterous change to the insurance system is most evident. And it is precisely in these areas where seatbelt use would have the greatest impact in preventing injury and reducing insured losses. Thus, not only are seatbelt laws good public ~~health~~ policy but they are also especially effective in areas with the highest losses and highest automobile insurance rates. Accordingly, we support this provision of S.1007 as well.

Conclusion

In conclusion, the United States Senate has already taken important action on highway safety by passing S.673. We call upon the House of Representatives to pass this, or similar legislation, as soon as possible.

A second portion of a comprehensive highway safety program would be the enactment of S.1007, to encourage states to require motorcyclists to use helmets and to encourage states to adopt tough seatbelt laws. Accordingly, we strongly support S.1007, particularly in the context of the other highway safety legislation that the United States Senate has approved.

0839k

Statement of the American Medical Association

to the

Subcommittee on Water Resources,
Transportation and Infrastructure

Committee on Environment and Public Works

United States Senate

RE: Mandated Safety Belt and Motorcycle Helmet Laws

October 17, 1989

American Medical Association
535 N. Dearborn Street
Chicago, Illinois 60610

Department of Federal Legislation
Division of Legislative Activities
(312) 645-4775

STATEMENT

of the

AMERICAN MEDICAL ASSOCIATION

to the

Subcommittee on Water Resources,
Transportation and Infrastructure

Committee on Environment and Public Works

United States Senate

RE: Mandated Safety Belt and Motorcycle Helmet Laws

October 17, 1989

The American Medical Association takes this opportunity to share with the Subcommittee on Water Resources, Transportation and Infrastructure the Association's full support for the "National Highway Fatality and Injury Reduction Act of 1989" (S. 1007), which was introduced by Senator John H. Chafee, Ranking Minority Member of the Committee on Environment and Public Works. The ongoing efforts of the federal government, many states, and concerned organizations like the AMA to establish the best possible means of protecting the public's health and safety on our nation's highways would be well served by the measures proposed in this legislation.

The fatalities and injuries that result from highway accidents pose a serious, national public health problem. As the Subcommittee is no doubt well aware -- since the federal government itself, through the National

Highway Traffic Safety Administration (NHTSA), is the primary resource of highway safety data -- motor vehicle crashes are the leading cause of death for people from 1 to 44 years of age. In 1988, about 47,000 people were killed and 4 million people injured on our highways. More paraplegics and quadriplegics are produced each year from road trauma than from all other causes combined.

Physicians and other health care professionals in emergency departments across the nation are the first-hand witnesses to this very costly loss of human life and potential. In addition, our health care system, in many cases overburdened and underfunded in meeting non-trauma-related health care needs of so many in this nation, bears a heavy financial burden from the continuing carnage on our highways. Motor vehicle injuries and fatalities that occurred in 1986 accounted for at least $4.1 billion in medical costs alone. There is every indication that publicly funded health care programs, which are in large part funded by the federal government, are bearing a larger and larger proportion of these costs.

The federal government has invested heavily in an interstate highway system to facilitate the movement of people and commerce, has mandated the manufacture of safer automobiles, and has even tied federal highway funding to states' adoption of the 55-, now 65-mile-an-hour speed limit. Now, it would be wholly appropriate for the federal government to take one step further and link receipt of a small portion of a state's federal highway funding to the enactment by the states of laws requiring all front-seat passengers in passenger cars to use safety belts -- or, if children, to be placed in child safety restraints -- and requiring motorcycle operators to wear motorcycle helmets, as the "National Highway Fatality and Injury Reduction Act" proposes.

Along with these measures, the proposed three-year grant program to assist states in implementing and enforcing safety belt and motorcycle helmet laws will help motivate states that have not already done so to enact these minimum safety requirements, which have been proven successful in limiting needless deaths and injuries due to highway accidents.

Seat Belts and Child Safety Restraints

There is no doubt that the use of safety belts and child safety restraints in motor vehicles saves lives and reduces the injuries that result from highway accidents. As to safety belts, fortunately, about two-thirds of states already have some form of safety belt-use law in effect, so the impact of such laws and a general increase in seat belt use even in states that do not now require their use can be fairly well determined. The resulting statistics make an impressive argument for measures that will encourage all states to enact safety belt use laws.

A study conducted by NHTSA estimated that in the period from 1983 to 1988 the number of lives saved by seat belt use was 15,500, with 10,500 of those saved lives due to state laws mandating safety belt use. Another study by NHTSA estimated that, since the first mandatory safety belt law became effective in 1984 -- in the State of New York -- through 1988, 10,200 lives have been saved and 274,300 moderate to critical injuries have been prevented by safety belt use in states that mandate use and a greater use of belts in states that do not mandate use.

Medical and bioengineering research substantiates the fact that, if seat belts were worn, one-third of those victims who are killed in high-speed crashes (exceeding 60 miles per hour) would survive, and an estimated two-thirds of severely injured victims would sustain only moderate injuries, if any at all, according to a 1981 study reported by the American Association for Automotive Medicine. Further, NHTSA has shown that states with safety belt laws have 7 percent fewer fatalities than would be expected without such laws.

Research on child safety restraints provides a similarly encouraging argument for their use, which all states have already mandated. A National Highway Traffic Safety Administration study of data from 1978 through 1988 estimated that child safety seats prevented 69 percent of infant fatalities and 47 percent of toddler fatalities. From 1981 to 1984, the percent of children saved by child safety restraints in states with child automobile occupant protection laws was 9 percentage points higher than in states without laws.

Yet, from 1978 through 1988, between 536 and 700 children under 5 years of age have been killed each year as occupants of cars, pickups, vans, and multipurpose vehicles. Despite implementation of child restraint laws in every state, efforts of education and enforcement -- for which states could receive grants under the "National Highway Fatality and Injury Reduction Act" -- must continue.

Motorcycle Helmets

It is with an ironic, self-deprecating kind of dark humor that motorcyclists themselves refer to motorcycle helmets as "brain buckets," yet this vivid description itself provides an ironic anecdotal proof of the need for motorcycle helmet use. Riding motorcycles is an extremely dangerous form of travel. The National Safety Council, in a study of Federal Highway Administration data, found that during 1986 there were 35 deaths for every 100 million miles of motorcycle travel, as compared to an overall motor vehicle death rate of 2.57 that same year.

An unprotected head is a major focus of trauma in a motorcycle accident. A National Highway Traffic Safety Administration study found that the use of motorcycle helmets saved 4,645 lives between 1982 and 1987. While the study estimated that current helmet use throughout the nation is at 60 percent, it was also estimated that, with 100 percent use of motorcycle helmets, an additional 9,030 lives would have been saved during this period.

Conclusion

In the same way the AMA has supported federal measures to encourage states to adopt a 55-mile-an-hour speed limit and a variety of federal requirements that manufacturers produce safer motor vehicles, the Association also supports the establishment of a federal role in encouraging states to enact the minimum safety measures proposed by the "National Highway Fatality and Injury Reduction Act of 1989."

Linking a small portion of a state's federal highway funding to the enactment of state laws mandating front-seat passengers' use of safety belts, the use of child safety restraints, and motorcycle operators' use of helmets would be another important step in what must be a continuing effort to provide the American public with the fullest possible safety protections on our highways.

Once enacted, the AMA would hope that this federal mandate could be extended to other important motor vehicle passenger safety measures. Physicians would be pleased to see the need for their services diminish in emergency departments and other areas related to providing medical care to motor vehicle accident victims. To achieve this goal, the AMA will continue its efforts to see that all passengers in all motor vehicles are required to wear safety belts, including outboard rear seat shoulder harnesses; that all motorcycle passengers are required to wear helmets, not just operators; and that motorcycle operators are required to successfully complete motorcycle safety education programs.

The AMA commends the Subcommittee for its interest in this vital public health issue and applauds Senator Chafee for introducing this legislation. We are ready to provide whatever assistance the Association can to bring this legislative proposal into law.

3298s

BIKERS AGAINST MANSLAUGHTER
National Headquarters
5455 Wilshire Boulevard, Suite 1600, Los Angeles, California 90036

RUSS BROWN
Founder

William H. Bish
National Director

Janet Burrell
Environment and Public Works Committee
United States Senate
Dirksen Building
Washington, D.C. 20510

October 12, 1989

Dear Ms. Burrell,

On behalf of Bikers Against Manslaughter and our nationwide membership of 103,000 concerned motorcyclists, I submit the enclosed petitions against Senator John Chafee's S.1007.

These citizen petitions were circulated by B.A.M. during the three month period July-September 1989 and bear the signatures of 19,910 voters, representing ALL 50 states and the District of Columbia, who are opposed to a national helmet law. Included also are Resolutions of Opposition from 59 groups and businesses which represent an additional 85,000 American motorcyclists.

Please enter for the record that these individual citizens and organizations have registered their opposition to S.1007.

In addition, we ask that you enter into the official hearing record the following language constituting the text of the petition:

"WHEREAS, mandatory helmet use laws have not been proven to reduce the incidence of motorcycle accidents or resulting rates of motorcyclist injuries and fatalities, and;

"WHEREAS, motorcyclist injuries account for less than .001 (1/10th of 1%) of total U.S. health care costs, and;

"WHEREAS, the vast majority of injuries to motorcyclist accident victims are to the torso and extremities,NOT the head,and;

"WHEREAS, more than 60% of all U.S. motorcyclists already wear a helmet either by choice or by existing State law, and;

"WHEREAS, laws regulating the use of motorcycle helmets should remain the province of individual States, NOT the federal government;

"WE, the 19,910 opponents of S.1007 whose names appear on petition, therefore submit this petition to the U.S. Senate Committee on Environment and Public Works and, as United States citizens and registered voters, we respectfully request that members of the Committee vote "NO" to S.1007."

Respectfully submitted,

William H. Bish
WILLIAM H. BISH
National Director

CC: Committee Members

1-800-4-BIKERS
(1-800-424-5377)
24 HOURS TOLL FREE NATIONWIDE

Sept. 25, 1989

COMMITTEE ON ENV. AND PUBLIC WORKS
ROOM SD-458
Dirksen Senate Office Bldg.
Washington D.C. 20510

RE: SB 1007

As a former Oregon State Representative, I urge you to defeat the bill to deny taxes to States that do not have a mandatory seat belt use law.

While serving in the Oregon State Legislature, for six sessions, during two of those sessions a mandatory seat belt law was argued about, hashed and rehashed while constituents became angrier and angrier about the bill. The Legislator's mail was overwhelmingly against mandating seat belt use in automobiles. A law was passed to require seat belts or approved child restraint devices for those under 16 years of age. Another law requiring seat belt use for all drivers and passengers was sent to Oregonians to vote on and was resoundingly defeated.

You are not withholding Federal money when you threat to take it away from States without mandatory seat belt laws, you are proposing to withhold money paid by people of the U.S. to run the government, not regulate decisions that an individual should be entitled to make for him or herself.

Sincerely,

Bob Brogoitti
Former Oregon State Representative
Bob Brogoitti

Copies: Sen. Mark Hatfield
Sen. Bob Packwood

C.M.R.A.

Connecticut Motorcycle Riders Association
Post Office Box 56, New Britain, CT 06050

RICHARD PAUKNER
Legislative Committee Chairman
71 [illegible] Road
Stamford, Connecticut [illegible]
(203) [illegible]

October 16, 1989

The Honorable Senator Daniel Patrick Moynihan
United States Senate
Chairman, Senate Water Resources, Transportation and
 Infrastructure Subcommittee
Washington, DC 20510

Dear Senator Moynihan:

As the chairman of the legislative committee of the Connecticut Motorcycle Riders Association, I respectfully request that the enclosed testimony be included in the record of the hearing on Senate Bill 1007 held on October 17, 1989.

Thank you for your consideration.

Sincerely,

Richard Paukner

TESTIMONY ON SENATE BILL 1007

October 17, 1989

Dear Mr. Chairman:

My name is Richard Paukner. I am 33 years old and the Legislative Chairman of the Connecticut Motorcycle Riders Association. I have been riding motorcycles since age 19. I successfully completed the experienced motorcycle riders education course offered in my state in 1984 and have been actively involved in the issue of mandatory helmet laws and motorcycle rider education since 1980. I am a parent and earn a living as a certified public accountant in Greenwich, Connecticut.

I am submitting this testimony to urge the members of this subcommittee to reject Senate Bill 1007, the National Highway Fatality and Injury Reduction Act of 1989, introduced by Senator John Chafee of Rhode Island on May 16, 1989. My testimony reflects the opinion of the Connecticut Motorcycle Riders Association, a membership organization presently numbering 2,678 members.

Our purpose today is not to argue the pros or cons of a mandatory helmet law. As United States Senators, I imagine each of you has already formed your own opinion on the issue. Our argument is straightforward: Traffic safety laws are best left in the hands of the state legislatures where complex issues can be debated and where those who are directly affected by the proposed legislation can readily communicate with their elected officials. Leaving the subject matter of S-1007 in the domain of the states is a reaffirmation of the democratic process which recognizes the importance of individual citizen participation. The passage of S.-1007 would nullify and void this process. My state legislature, if threatened by the loss of Federal highway funds, will rubber stamp any and all measures necessary to prevent that loss. The dialogue will cease. If the supporters of S.-1007 believe they have such compelling evidence that seat belts and helmets should be mandated for everyone in all states, then their evidence should stand up to the scrutiny of the state legislative process and they will prevail. Conversely, if their arguments are less than convincing or if the results of their proposals do not materialize after passage, the present state legislative process allows for change to occur. Senate Bill 1007 precludes that possibility. We contend that regardless of the underlying subject matter, any proposal to coerce state legislative action is poor public policy except in those few cases where inaction by the states present a clear and compelling need to intervene. During 1989 no less than 31 states considered the issue of mandatory helmet laws. This issue is not a neglected one which calls out for federal intervention.

Testimony from supporters of S.-1007 will undoubtedly argue that the costs to treat injured motorcyclists justify any means necessary to limit federal Medicaid expenditures. We would ask the members of the Subcommittee to consider closely the studies, the methodology employed, the motivation of those who initiate the studies and whether the studies support the conclusions drawn. We do not question the integrity of the researchers. Consider just one of the major helmet studies released in 1980 by the N.H.T.S.A.

entitled, *"Report to the Congress on the Effect of Motorcycle Helmet Use Law Repeal—A Case for Helmet Use."* This report perhaps best illustrates the importance of "reading between the lines." The report seemed to conclusively show the effectiveness of helmet laws by comparing decreasing fatalities rates prior to 1976 when all but three states had mandatory helmet laws with the dramatically increasing fatality rates during the period 1976 to 1979 when 27 states repealed or weakened their helmet laws. The validity of the report's conclusion however was seriously challenged by simply separating the rising fatality rates from 1976-1979 into two categories: those from states retaining their helmet laws and those from states repealing or weakening their helmet laws. When divided as such a totally different scenario emerged, namely the dramatic increase was occurring at effectively the same rate in both states with and without helmet laws. This report typifies a common flaw pervading many pro-helmet law studies: the studies focus on only one variable namely the use or non-use of a helmet thereby attributing the effects of other variables (such as the rising number of motorcyclists, vehicle miles travelled, rate of alcohol use, etc.) to the use of the helmet.

The Connecticut Motorcycle Riders Association has been in the forefront of motorcycle safety efforts in our state for nearly a decade. In 1981 we supported the creation of a state-wide self-funded motorcycle rider education course. Since implementation in 1982, motorcycle deaths have fallen 43% in our state while the helmet law requirement has remained unchanged. We supported replacing the pre-existing motorcycle licensing test with an updated, more comprehensive test developed by the Motorcycle Safety Foundation. We initiated the concept of requiring a minimum insurance discount for all riders passing the safety course and we initiated the proposal requiring successful completion of the rider education course for all minors as a prerequisite for obtaining a motorcycle license. We continue to support more severe penalties for those operating a motorcycle without a valid license. We believe an increase in Title 402 funding is a far better use of federal monies than the use proposed in S.-1007 which amounts to 95 million dollars over a three-year period (fiscal years 1991-1993). Our efforts at reducing the cost and severity of motorcycle accidents through stricter licensing of the motorcyclist, better training for the motorcyclist, and the incorporation of motorcycle awareness into the automobile licensing process are working nationwide predominantly through the efforts of groups such as ours in each of the fifty states who unanimously oppose S.-1007.

In conclusion we urge the Subcommittee to affirm the decision made by the United States Congress in 1975 leaving the issue of traffic safety laws to the individual states by rejecting Senate Bill 1007.

Respectfully submitted,

Richard Paukner

Freedom First in Iowa
P.O. Box 73 • Des Moines, Iowa 50301 • 515/265-2588

Marshall County Co-ordinator
"FREEDOM FIRST IN IOWA"

Linda Clark
306 S. 2nd Ave.
Marshalltown, Iowa 50158
515-753-8915

TESTIMONY 10-17-89

HONORABLE SENATORS:

The bill before this committee as cited, "National Highway Fatality and Injury Reduction Act of 1989 (S.1007), the purpose plainly appears to be one of penalty. The issue of safety means being free from danger. This Act will remove personal discretion, as regards one's individual safety, unless they commit an offense. What may be safe for one is not always in another's best interest to do.

A FREE man must be a reasoning man, as Justice Robert Jackson so eloquently ruled "IT IS NOT THE FUNCTION OF OUR GOVERNMENT TO KEEP THE CITIZEN FROM FALLING INTO ERROR; IT IS THE FUNCTION OF THE CITIZEN TO KEEP THE GOVERNMENT FROM FALLING INTO ERROR."

This legislation threatens the very principles this nation was founded upon. A persons right to life, liberty, security, due process and equal protection guaranteed by the Bill of Rights.

The last three years of my life have been drastically changed because of the enactment of Iowa's Seat Belt Use Law. First hand experience tells me this law will cause injuries and deaths, Iowa's fatalities have not decreased, persons buckled taking more risks, as well the device is unreliable. Facts available prove forced belt laws have not shown any substantial beneficial effect in any country. Facts prove areas without the law have far less fatalities. There is loss of respect for law enforcement, as the law arbitrarily and capriciously enforced, for revenue enhancement it appears. Distrust in legislative process, over 400,000 Iowan's Petitioned for Repeal of the Law, with the people unrepresented, forced to wait for election removal, as Iowa has no referendum to remove the law, as three states have done, by vote of the citizens. The judicial branch at the state level thus far upholding state policy rather than Consti-

Freedom First in Iowa
P.O. Box 73 • Des Moines, Iowa 50301 • 515/265-2588

tutional Rights. How do I know?

I've spent the last three years in research, with a criminal case in court, representing self, for over a year. My crime, application of an exemption in the Iowa law, teaching my disabled daughter to drive not allowed as the undefined work in the exemption code. The vagueness and injustice of the statute has caused me to seek relief from the United States Supreme Court to rule the unconstitutionality.

I have been changed from a wife, Mother of three, to a citizen in restoration of her rights and purpose of life, now a criminal before the court.

This is not just a safety measure. G.M. so aptly states, "It's not just your car it's your freedom." They are right about this statement.

This regulation will not cause a decrease in accident numbers, as it does nothing to address the cause of crashes, that education to be a responsible driver will.

Persons in Iowa have died from belt induced injury. The vehicle design and the way the car driven will determine outcome in a crash. This a standard regulation, yet persons not standard sizes, or car belts all the same by a standard. The older the car the less effective of the belt by design. In view of these statements forced compliance is tyrannical government of an opinion of what is deemed safety and best interest. The people did not ask for, nor need this personal regulation. The people will decide what is best in safety, with competition in the automobile industry to determine which car the better to purchase, vehicle design would be improved by purchasing power; not forced control.

RESPECTFULLY SUBMITTED,

Linda Clark

TESTIMONY OF EDWARD H. UTLEY, PRESIDENT
GEICO CORPORATION, WASHINGTON, D.C.
ON THE
NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989 (S. 1007)
PRESENTED TO
THE U.S. SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
OCTOBER 17, 1989

I AM EDWARD H. UTLEY, PRESIDENT OF GEICO CORPORATION, THE NATION'S FIFTH LARGEST SHAREHOLDER-OWNED PROPERTY AND CASUALTY INSURER. THE GEICO COMPANIES INSURE A TOTAL OF 1.7 MILLION PRIVATE PASSENGER AUTOS AND 17,500 MOTORCYCLES IN THE DISTRICT OF COLUMBIA AND ALL STATES EXCEPT MASSACHUSETTS AND NEW JERSEY.

GEICO ENTHUSIASTICALLY SUPPORTS THE NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT OF 1989 (S. 1007). WE BELIEVE THIS BILL IS VITAL, NOT ONLY FOR IMPROVING SAFETY, BUT FOR HELPING TO PROTECT CONSUMERS AGAINST RISING AUTO INSURANCE AND MOTORCYCLE INSURANCE PREMIUMS. REQUIRING STATES TO PASS MANDATORY SEAT BELT LAWS AND UNIVERSAL HELMET USE LAWS IS AN APPROPRIATE MEANS FOR PROTECTING PUBLIC SAFETY AND CONSUMER POCKETBOOKS.

THE EVIDENCE IS CLEAR THAT SEAT BELTS AND MOTORCYCLE HELMETS SAVE LIVES AND HELP PREVENT SERIOUS INJURIES. THE NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION (NHTSA) ESTIMATES THAT SEAT BELTS REDUCE THE RISK OF DEATH AND SERIOUS INJURY IN A CRASH BY AS MUCH AS 55 PERCENT AND THAT MOTORCYCLE HELMETS REDUCE THE RISK OF FATALITIES BY AS MUCH AS 29 PERCENT. IN 1978, NHTSA FOUND THAT IN 11 STATES THAT HAD REPEALED HELMET LAWS IN 1976 AND 1977, MOTORCYCLE FATALITIES IN THE FIRST SIX MONTHS OF 1977 INCREASED 33 PERCENT OVER THE SAME SIX MONTHS OF THE PRECEDING YEAR. FIGURES RECENTLY RELEASED BY THE OREGON MOTOR VEHICLES DEPARTMENT SHOWED THAT IN THE YEAR SINCE A VOTER-APPROVED LAW MANDATING MOTORCYCLE HELMETS WENT INTO EFFECT (JUNE 1988 TO JUNE 1989), MOTORCYCLE FATALITIES DROPPED BY A THIRD.

ACCORDING TO THE NATIONAL SAFETY COUNCIL, SOME 26 MILLION PASSENGER CARS AND 4.8 MILLION TRUCKS WERE INVOLVED IN CRASHES IN 1987. SOME 36,500 PASSENGER CARS AND 15,900 TRUCKS WERE INVOLVED IN FATAL ACCIDENTS -- ACCIDENTS THAT KILLED 33,300 PEOPLE. THERE WERE 360,000 MOTORCYCLE CRASHES THAT SAME YEAR, INCLUDING 3,900 FATAL CRASHES. SOME 460,000 MOTORCYCLE RIDERS WERE INJURED IN CRASHES, WHILE MILLIONS WERE INJURED IN CAR AND TRUCK CRASHES.

SOME ARGUE THAT REQUIRING SEAT BELT AND HELMET USE RESTRICTS INDIVIDUAL FREEDOM. BUT WE MUST BALANCE INDIVIDUAL FREEDOM WITH THE PUBLIC GOOD. WE HAVE SAFETY LAWS THAT REQUIRE PEOPLE TO BE SOBER BEHIND THE WHEEL, TO DRIVE ON THE PROPER SIDE OF THE ROAD AND TO TAKE A TEST TO GET A DRIVER'S LICENSE. WHY SHOULD REQUIRING SEAT BELT AND HELMET USE BE ANY DIFFERENT?

BOTH SEAT BELTS AND HELMETS SAVE THE PUBLIC MONEY BY REDUCING DEATHS AND INJURIES. TRAFFIC CRASH DEATHS AND INJURIES -- MANY OF THEM PREVENTABLE WITH SEAT BELTS AND MOTORCYCLE HELMETS -- COST SOCIETY MORE THAN $74 BILLION ANNUALLY, ACCORDING TO NHTSA ESTIMATES.

AUTO AND MOTORCYCLE INSURANCE PREMIUMS ARE DETERMINED IN LARGE PART BY THE NUMBER OF CLAIMS FILED AND THE SEVERITY OF THOSE CLAIMS. WHEN THERE'S A HIGH NUMBER OF EXPENSIVE CLAIMS, THOSE INVOLVING SERIOUS INJURIES FOR EXAMPLE, PREMIUMS GO UP. WHEN THERE ARE FEWER DEATH AND SERIOUS INJURY CLAIMS, PREMIUMS STABILIZE.

SHOULD THOSE INDIVIDUALS WHO ACT RESPONSIBLY TOWARD HIGHWAY SAFETY (THOSE WHO BUCKLE UP AND WEAR HELMETS) BE FORCED TO SUBSIDIZE THE RISK OF THOSE WHO MAKE A DELIBERATE DECISION TO ACT IRRESPONSIBLY BY NOT WEARING A SEAT BELT OR A HELMET. WE THINK NOT. AS A MATTER OF FACT, GEICO WILL NOT INSURE ANY MOTORCYCLE RIDER WHO REFUSES TO WEAR A HELMET. AND WE STRONGLY ENCOURAGE OUR POLICYHOLDERS TO BUCKLE UP WHENEVER THEY GET IN THE CAR.

A FEDERAL REQUIREMENT FOR MANDATORY SEAT BELT AND UNIVERSAL HELMET STATUTES IN ALL STATES WOULD GIVE THESE VALID UNDERWRITING CONCERNS THE FORCE OF LAW AND WOULD HELP CONTAIN AUTO AND MOTORCYCLE INSURANCE COSTS FOR ALL CONSUMERS.

GEICO STRONGLY URGES YOUR SUPPORT OF S. 1007.

THANK YOU.

GFWC Volunteer

GENERAL FEDERATION OF WOMEN'S CLUBS

1734 N Street, N.W. • Washington, D.C. 20036-2990
Telephone (202) 347-3168
FAX (202) 835-0246

Testimony of

Alice C. Donahue

International President

of the

General Federation of Women's Clubs

on

The National Highway Fatality and Injury Reduction Act

(S. 1007)

Submitted for the Hearing Record

of the

Subcommittee on Water Resources, Transportation and Infrastructure

Senate Committee on Environment and Public Works

October 17, 1989

On behalf of the General Federation of Women's Clubs (GFWC), I would like to thank you, Chairman Moynihan, for scheduling today's hearing on S. 1007, the National Highway Fatality and Injury Reduction Act of 1989. I would also like to thank the bill's sponsor, Senator John Chafee, for inviting me, in my capacity as GFWC International President, to submit testimony in support of this measure. More importantly, I thank and applaud Senator Chafee for his leadership on the important issue of highway safety.

The General Federation of Women's Clubs is comprised of 9,000 clubs and nearly 400,000 members in 52 state federations (including the District of Columbia and Puerto Rico) in the United States. Unified by their commitment to community service and education, our local clubs tackle issues ranging from child abuse to literacy to natural resource conservation. In fact, the broad mission of the organization is reflected in our motto, "Unity in Diversity."

I draw attention to the wide ranging interests of our member clubs because I feel it is important to note that against this backdrop of varied program possibilities, clubs in at least half of our federations are currently undertaking projects in highway safety -- particularly the promotion of safety belt and child restraint usage. In fact, it would not be an exaggeration to say that almost every one of our state federations has been active in efforts to educate the public about highway safety and many have worked for the passage of laws in their states requiring the use of safety belts, child restraint seats and motorcycle helmets. From the national level, GFWC has had resolutions in support of safety belts since 1974 and motorcycle helmets since 1976. Copies of these resolutions are attached.

I am pleased to note that GFWC members' efforts and those of so many other safety advocates have met with significant success. Twenty-two states, plus the District of Columbia and Puerto Rico, require universal helmet usage by motorcyclists, while 23 states mandate the use of helmets by riders of a certain age (usually under age 18). Since 1984, 34 states and the District of Columbia have passed laws requiring drivers and front seat passengers of automobiles to wear safety belts.

The remaining 16 states require use of child restraints for small children and in many cases belt usage by older children under a certain age. Overall, it is estimated that safety belt use has increased from approximately 14 percent of the American public in 1984 to 47 percent now.

These are very encouraging statistics of which all citizens concerned with safety should be proud. In fact, at first glance they might lead one to wonder about the necessity of the bill under consideration by the Subcommittee today. Unfortunately, despite these significant improvements in highway safety, we have a very long way to go.

In 1988 over 4 million people were injured on U.S. highways. Approximately 47,000 people were killed in highway accidents. To put this number in perspective, I draw attention to an observation made by Senator Chafee that this is equivalent to a major airplane crash killing 128 people every single day of the year! Unfortunately, while many Americans may feel some trepidation about boarding an airplane after hearing the news of an airplane crash, many of these same Americans will think nothing of driving out on the highway without fastening their safety belt or of going for a ride on a motorcycle without wearing a helmet.

The tragic part of the statistics about serious highway injuries and deaths is that many would be better classified as costly preventable injuries, than as accidents. Research conducted by the National Highway Traffic Safety Administration (NHTSA) has demonstrated that safety belts reduce the risk of being killed in a crash by about 45 percent. Motorcycle helmets reduce the likelihood of being killed by about 29 percent. If all motorists wore these simple safety devices, thousands more would still be alive today.

Testimony of Alice C. Donahue
General Federation of Women's Clubs
October 17, 1989

Critics of mandatory safety belt and helmet laws argue that if people want to risk their lives, then it is their right and privilege to do so. They argue that the government has no business telling them what to do.

This argument simply does not hold up. Crash victims and their families are not the only ones affected by preventable highway injuries. The losses borne by society in both human and financial terms are tremendous, including lost productivity, increased health care and rehabilitation costs, increased insurance premiums, and increased government sponsored disability and survivor benefits. Such waste cannot and should not be allowed to continue.

All of this brings me back to Senator Chafee's bill, S. 1007, the National Highway Fatality and Injury Reduction Act. This legislation recognizes that highway safety is a matter of national importance and national concern.

As noted earlier, many states have responded to the need to adopt safety belt and helmet laws, but not all. Safety advocates in the remaining states could use some help convincing their legislators of the importance of this issue. I found it interesting that one GFWC leader in Virginia, who has worked on many different difficult issues before her state legislature said, "The motorcycle helmet law was one of the most controversial we ever tackled." Although in Virginia advocates were successful, it appears that some state legislatures are unwilling to act in the name of safety considerations alone. For these states, a monetary "carrot and stick" may be the only way to ensure action.

Testimony of Alice C. Donahue
General Federation of Women's Clubs
October 17, 1989

As you know, S. 1007 proposes to tie a portion of federal highway construction funds to the passage of mandatory safety belt and universal motorcycle helmet laws. States would be given three years within which to act to pass such laws. If a state did not comply within the 3-year period, it would lose 5 percent of its federal highway construction funds in its first year of noncompliance. If after 5 years the state was not in compliance, it would lose 10 percent of its federal highway construction funds that year and every year thereafter in which it failed to comply.

On the incentive side of the equation, funds would be made available to states in compliance to assist them in implementing and enforcing safety belt and helmet use laws. To ensure that these funds are used wisely and effectively, recipient states would have to demonstrate the implementation of a community-based education program on the usage of safety belts, child safety restraints and motorcycle helmets, and document increases in public compliance with laws. Grants to states would be limited to a time-period of three years.

It is understandable that states would resist being pressured into passing laws. We all know that the passage of safety belt and motorcycle use laws is under the jurisdiction of state legislatures. However, just as individual citizens must be accountable to society as a whole, states must be accountable to the federal government for the federal funds they receive. States not willing to advance the national concern of highway safety should be prepared to lose a portion of national highway funds.

Mr. Chairman, members of the subcommittee, S. 1007 is a bill that will enable us to save both human lives and scarce federal dollars. I can think of no better combination. On behalf of the General Federation of Women's Clubs, I encourage you to approve this legislation and to send it to the full Senate for consideration.

GFWC Resolution # 014-040

Automobile Restraint Systems (Convention 1974, Amended and Reaffirmed 1980, Amended and Reaffirmed 1985 and 1987, Amended 1989)

WHEREAS, Studies prove that shoulder harness style safety belts offer the best protection available for motor vehicle occupants, and their use can save many thousands of lives annually and drastically reduce the number of serious injuries; and

WHEREAS, Too few Americans use these life-saving devices, even though most automobiles on the road today are equipped with them; therefore

RESOLVED, That the General Federation of Women's Clubs commends the Secretary of Transportation for support of legislation requiring automobile restraint systems and dynamically tested child restraints in all motor vehicles; and further

RESOLVED, That the General Federation of Women's Clubs supports the implementation of state laws which would mandate the use of shoulder harness style safety belts; and further

RESOLVED, That the General Federation of Women's Clubs continues its education program to promote the use of shoulder harness style safety belts for all motor vehicle seats and/or other restraint systems for safety in automobiles.

GFWC Resolution # 014-680

Safety for Motorcyclists (Convention 1976, Amended 1980, Reaffirmed 1986, Amended and Reaffirmed 1989)

WHEREAS, Motorcyclists who do not wear helmets risk sustaining serious head injuries when involved in accidents; therefore

RESOLVED, That the General Federation of Women's Clubs:

1. Supports legislation requiring helmet use by motorcyclists;
2. Opposes repeal of existing laws which require motorcyclists to wear helmets.

Review of Mr. Ouellet's Research Report "Motorcycle Helmet Use and Collision Performnce" presented in testimony on S.1007

by
Jonathan Goldstein, Ph.D.
Bowdoin College

The major limitation of Mr. Ouellet's findings on motorcycle helmet effectiveness is the blatantly inappropriate application of statistical methods to analyze the extensive data on motorcycle accidents collected by the USC research team. The statistical methodology employed (variants of correlation analysis) is fundamentally flawed and its application results in estimates of helmet effectiveness which are grossly and systematically overstated. Thus from a statistician's point of view, Mr. Ouellet's research provides absolutely no scientifically valid evidence in favor of motorcycle helmet effectiveness.

In particular, the statistical methodology employed -- correlation analysis -- cannot be used to establish a causal mechanism between any two variables (i.e. helmets and injury). This limitation of correlation analysis is universally recognized and is not disputed. The fatal flaw in correlation analysis is its inability to control for all relevant factors that could be responsible for movements or changes in a targeted (dependent) variable such as death or injury. Failure to control for all such factors implies that a third (uncontrolled for) factor could be responsible for the movements in one or both of the correlated variables. Thus, the effects of a third factor could erroneously be assigned to or associated with one of the two correlated variables implying that the "causal" effect of that variable is either over or understated.

In accident studies, such as Mr. Ouellet's, the uncontrolled factor is the difference in risk aversion between helmeted and nonhelmeted riders. Nonhelmeted riders are inherently more risky individuals implying that on average they are more likely to have higher speeds, crash speeds and alcohol consumption (see Goldstein (1985) for statistical evidence). Given that speed and alcohol are major determinants of death and injury in motorcycle accidents, the failure of correlation analysis to control for these differences implies that the death and injury-inducing effect of the higher speed and alcohol levels associated with nonhelmeted riders will be inappropriately assigned to the nonuse of a helmet. Thus, helmet effectiveness is systematically overstated by this study. This study is not capable of determining whether it is the higher speeds, alcohol levels, or helmet-use decision of nonhelmeted riders that is responsible for the greater death and injury rates experienced by this group.

What is particularly disturbing about Mr. Ouellet's study is that his own findings clearly establish that nonhelmeted riders are more risky. In particular on p. 6 of his report he shows that nonhelmeted riders are overrepresented in motorcycle accidents and on p. 14 he shows that nonhelmeted riders have higher alcohol levels. Despite this evidence, he continues to compare helmeted and nonhelmeted riders without controlling for the risk (speed, alcohol) differences between these two groups.

An alternative study (Goldstein (1986, 1988)) that uses the same data as Mr. Ouellet and controls for the uncontrolled factors in Mr. Ouellet's study finds dramatically different results concerning helmet effectiveness. The most notable result is the existence of a head-neck injury tradeoff that confronts helmet users. While helmets reduce the severity of head injuries, past a critical impact speed to the helmet (13 mph) they exacerbate the severity of neck injuries. In addition, it is shown that helmets have no statistically significant impact on the probability of a fatality.

As a final general point, the fact that nonhelmeted riders are inherently more risky does not imply that putting a helmet on their head will eliminate the higher speed and alcohol levels which cause this group's higher death and injury rates. On one hand, risky behavior of this type should be unaffected by mandatory helmet use. On the other hand, the theory of risk compensation, for which there is preliminary empirical support, predicts that mandatory helmet use will be compensated by other risky behavior (higher speeds and higher alcohol levels).

A review of the specific points in Mr. Ouellet's paper follows:

p. 1 The 11 points labelled as "facts" are actually combinations of facts and inferences. The inferences are derived from the flawed statistical methodology discussed above. Since facts cannot be used in isolation to derive conclusions about helmet effectiveness, no valid conclusions about motorcycle helmet effectiveness are contained on p. 1.

p. 2 The comparison of helmeted rider's and nonhelmeted rider's head injury rates does not control for the high crash speeds and alcohol levels which determine the severity of nonhelmeted rider's head injuries. Thus, it cannot be concluded that helmets reduce head injuries from this analysis. The adjustment for unequal numbers of helmeted and unhelmeted riders in no way corrects for these uncontrolled factors.

p. 3 This analysis does not determine whether an unhelmeted rider's brain injuries result from higher crash speeds, higher levels of alcohol or the nonuse of a helmet. Thus, it cannot be concluded that helmets prevent debilitating brain injuries from pavement impacts.

p. 4 The Chi-square test is the inappropriate test for determining if helmets have a statistically significant impact on death rates. Once again, the same uncontrolled factors (speed and alcohol) could easily explain the difference in death rates rather than the nonuse of a helmet. Goldstein (1986) controls for all relevant factors and shows that helmets have no statistically significant impact on the probability of fatality.

p. 6 The fact that nonhelmeted riders only comprise 50% of the motorcycling population but are involved in 60% of the accidents strongly supports the hypothesis that nonhelmeted riders are inherently more risky. Yet, Mr. Ouellet's study fails to control for the more risky behavior of nonhelmeted riders and instead overstates helmet effectiveness by assigning the death and injury-inducing effects of risky behavior to the nonuse of a helmet.

p. 7 Once again the failure to control for differences in speed and alcohol levels between helmeted and nonhelmeted riders makes simple comparisons of these two groups invalid. Goldstein (1986) has clearly shown that helmets exacerbate neck injuries.

p. 14 These results further support the notion that nonhelmeted riders are inherently more risky: nonhelmeted riders have higher levels of alcohol involvement. Yet, Mr. Ouellet's study fails to control for higher alcohol levels in nonhelmeted riders. This glaring contradiction invalidates his findings. While the effect of alcohol on the occurrence of an accident is obvious, the effect of alcohol on injury severity can also be significant (see Goldstein (1986; pp. 358-9)).

In conclusion, the same fatal methodological flaw consistently underlies Mr. Ouellet's results. Over the year, introductory students of statistics have mastered the notion that correlation cannot be used to prove causality. The validity of this statement is made evident by Mr. Ouellet's study. If one is sincerely committed to the development of responsible public policy, one cannot use Mr. Ouellet's findings as the basis for policy formation.

Highway
Users Federation
FOR SAFETY AND MOBILITY

STATEMENT FOR THE RECORD

OF THE

WATER RESOURCES, TRANSPORTATION AND

INFRASTRUCTURE SUBCOMMITTEE

OF THE

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ON S.1007,

THE NATIONAL HIGHWAY FATALITY AND INJURY REDUCTION ACT

HEARING DATE: NOVEMBER 17, 1989

1776 Massachusetts Avenue, N.W., Washington, D.C. 20036 (202) 857-1200

COMMENTS
BY
HIGHWAY USERS FEDERATION
ON
S.1007
NATIONAL HIGHWAY FATALITY & INJURY REDUCTION ACT OF 1989

Motorcycle helmet use, safety belt use and child restraint use are important life saving measures. Clearly, laws requiring their use is the most effective means of achieving high use rates. Federal support for such laws at the state level has proven effective over the years. S.1007, the National Highway Fatality & Injury Reduction Act of 1989 is an effective means of achieving uniform enactment of motorcycle helmet and safety belt use legislation.

The Highway Users Federation would be remiss if it did not raise an issue regarding the use of sanctions on the Highway Trust Fund as a leverage to achieve state enactment. We would prefer the singular use of incentives as contained in Section 160 of S.1007. However, we do recognize that Congress has had recent experience with the use of Highway Trust Fund sanctions, i.e.; 21 year drinking age, and would hope that the use of sanctions would not be necessary in the pursuit of helmet use and safety belt use legislation.

The use rates contained in the Incentive Grant Program criteria are reasonable and achievable within the time frames indicated. We applaud the sponsors of S.1007 for both the Incentive Grant Program and for the useage goals. Attached to these comments are two technical reports prepared by the federation which address Helmet Laws and Safety Belt Use Programs.

As a final comment the federation supports incentive programs to achieve national uniformity in many laws concerned with traffic operation and we would encourage the Congress to consolidate existing incentive programs, Sections 408 & 410 of The Highway Safety Act with S. 1007 in the New Highway and Safety Act to be enacted in 1991.

JERSEY A.B.A.T.E
American Bikers Aimed To Educate

Mike Tortosa
P.O Box 173
Bogota, N.J. 07603
201-342-0589

State Legislative
Coordinator

October 20, 1989

The Honorable Senator Daniel Patrick Moynihan
United States Senate
Chairman, Senate Water Resources,Transportation and
Infrastructure Subcommittee
Washington, D.C. 20510

Dear Senator Moynihan:

As the New Jersey State Legislator Coordinator for Jersey A.B.A.T.E., I respectfully request that the enclosed testimony be included in the record of the hearing on Senate Bill S.1007 held on October 17, 1989.

Thank you for your consideration.

Respectfully

Mike Tortosa

Mike Tortosa
State Legislator Coordinator
Jersey A.B.A.T.E.

Dear Mr. Chairman and members of the Committee;

My name is Mike Tortoss . I serve in the capacity of State Legislator Coordinator for New Jersey A.B.A.T.E. Jersey A.B.A.T.E. is a non profit corporation in the State of New Jersey dedicated to preserving the rights , safety and well being of all motorcyclist. We promote awareness programs for the motoring public and motorcycle safety. Encourage a more cooperative spirit between the general public and motorcyclists and provide an organized strength in numbers voice to the local and state legislators.

My testimony reflects the opinion of Jersey A.B.A.T.E. , an organization presently numbering 2,000 members. New Jersey already has a mandatory helmet law, so the State only stands to gain by the passage of this bill. However, we are strongly opposed with the intervention of the government to mandate safety measures. Jersey A.B.A.T.E. supports the rights of adults to choose whether or not to wear a helmet. Our position has remained unchanged. Even though our members are strongly encouraged to wear helmets, we believe the choice clearly should remain with the individual. We consider the definition of adult as one who had attained maturity and is of legal age.

To clearly understand our position on helmet laws, it is first necessary to make a distinction between the use of helmets and mandatory helmet laws. Some members of society tend to view the helmet only as a mechanical safety device in the same category as seat belts. What they fail to realize is that it is viewed by motorcyclists as an accessory of personal apparel connected with their chosen lifestyle and their right as adult to make their own decisions. Unlike seatbelts, helmets do not come "standard" with motorcycles and represent a separate purchase. Helmet laws, on the other hand, are a manifestation of society's belief that its members lack the wisdom to make decisions of personal safety and must therfore be subject to arbitrary laws. This is a concept we reject.

The injuries from which a helmet may protect a rider do not occur until after an accident. A mandatory helmet law does nothing to prevent an accident from occurring Jersey A.B.A.T.E. is a strong advocate of motorcycle rider education. improved licensing and testing and increased public awareness: all proven preventative measures that actually reduce accidents and improve safe operation. These statistically viable programs did not exist 20 years ago. and there is some evidence that exclusive focus on helmet laws, while ignoring the benefits of these programs, has been detrimental to the advancement of a comprehensive approach to motorcycle safety.

It is possible that the political realities of the legislative process may actually prevent the implementation of other motorcycle safety initiatives in the presence of mandatory helmet laws: For example, only after a decade long debate on helmet use did Massachusetts finally adopt a rider ed program in 1987. Motorcycle rider training bills were shelved five years in a row while helmet law proposals dominated that legislature's attention

It is suggested by some that permitting mature adults to make their own decisions on helmet use created an excessive burden for society as a result of health care costs incurred by helmetless riders. However, when the costs of motorcycle related injuries are examined in the context of the total health care picture the figures are not unusually startling.

According to the National Highway Traffic Safety Administration.Americans spent $4.1 billion on all motor vehicle accident related medical expense in 1986. This compares with $425 billion for total U.S. health care costs (1987 statistical Abstract of the U.S.*), indicating motor vehicle accidents account for approximately 1 percent of our nation's annual health care costs.

The Motorcycle Industry Council, in its 1987 Motorcycle Statistical Annual*, estimates that there are approximately 8 million motorcyclists who constitute roughly 5 percent of the total driving population of 160 million licensed drivers. If it is assumed that motorcyclists account for as much as 10 percent of all accident related medical expenses (which could be argued as excessive), then all motorcycle accidents represent less than one tenth of 1 percent of all medical expenses in a given year. This figure would be further reduced if it were possible to determine what percentage of those expenses were incurred by helmeted vs. non helmeted riders.

Realistically, Motorcyclists are certainly not the only group of persons who might create a social burden as a result of individual decisions. We are a society of risk takers and even by avoiding the extremes, mountain climbers, bicyclists, skiers, roller skaters and joggers could be placed in a similar category. Despite these burdens, we don't see aggressive legislative action designed to limit society's exposure to these costs. We have long ago decided as a civilized society to balance individual freedoms with necessary social costs.

The value of a helmet is neither enhanced nor diminished by the presence or absence of a mandatory helmet law. We believe that the same principle applies to mandating personal safety, whether it is for motorcycling, hang gliding or some other risk-related activity. We must rely on individuals and society to provide the education and the experience to aid us in making the decision that is right for us. Ultimately, society cannot be expected to make individual decisions; we must be free to make them ourselves.

*Reflects 1885 data.

Respectfully submitted

MASSACHUSETTS HEAD INJURY ASSOCIATION

Denholm Building Rm 325 464 Main Street Worcester MA 01608 (508) 795-0244

PUBLIC TESTIMONY

Oct.17, 1989

Committee on Environment and Public Works

S. 1007

The National Fatality and Injury Reduction Act of 1989

Honorable Quentin N. Burdick and Members of the Committee,

The Massachusetts Head Injury Association wishes to add its' testimony in favor of S. 1007 as introduced by Senator Chaffee and co-sponsored by Senator Moynihan.

Most highway injuries sustained in car or motorcycle accidents are preventable. So why is the public so reluctant to take preventive measures? The answers to this question are many and varied and include myths, misinformation, and denial of accident possibility - accidents only happen to others. Thus,we feel it is high time that some stringent measures be taken by Congress to heighten public and state legislators' awareness as to the efficacy and necessity of safety laws.

First we would like to mention the problem of myths. Although most reasonable people can be convinced that the majority of accidents do not result in a fire that would trap a belted driver, there is always some one who can give you an antitheses situation. If you press the teller for details, they can not give you any, only the conviction that their story is true. Myths are perpetuated by the repetition of false assumptions and the seat belt and helmet issue has generated a tremendous amount of myths. We hope that the educational component of S. 1007 will help eradicate the myths that have made seat belt and helmet use a contested issue.

Misinformation is even more prevalent. The accident victim is the only one affected by the accident, goes the argument from opponents of safety legislation. If that was the case there would be no law suits, no insurance rate increases, and no tears shed by anyone after an accident.
According to the Massachusetts report "The Status of People with Brain Injuries in Massachusetts", of the 8000 head injured persons who are annually discharged from acute hospitals 82.6% go home and are cared for by family members. We know of many cases where a family member has to leave his place of employment to be the caretaker of the head injured person, thus creating a double hardship for the family. The variety and cost of services that a head injured person requires, makes rehabilitation available only to the wealthy or persons covered by comprehensive insurance policies or settlements. The state programs can not keep up the demands of the uninsured or underinsured and our waiting list grows longer every day.

According to information gathered a few years ago, the average institutional yearly cost for severe head injury is $150,000 and the life time care cost is between $4,000,000 and $7,000,000. The young are most likely survivors of head injury and live to be a financial and emotional burden to their families and society. All of this tragic waste is so unnecessary and preventable. Only 1% of accident victims die, the rest are left with a variety of disabling conditions, the most devastating of which is traumatic head injury, 50% of it caused by motor vehicle accidents.

Although the head injured are experts at denial of their problems, the general public is just as proficient. It is always the neighbor's child who gets in an accident, not I or my child. The sad statistics show that every 15 seconds someone sustains a head injury in this country. We all want to deny the astronomical costs of head injuries. The common cry of "my insurance pays for it" denies the fact that we are the ones that have to pay the insurance companies, their money does not grow on trees. The state report also shows that Medicaid and Medicare pays a large portion of head injury medical costs in Massachusetts.

There is a multitude of statistical evidence that prevention works, is cost effective and necessary. What the state legislators and the general public need in Massachusetts is "incentives", such as are outlined in S. 1007, that would counteract the nonsense spewed forth on our public air waves regarding safety legislation. The Massachusetts Head Injury Association and its 1600 members are in full support of the bill. We hope that the attached excerpts from the state report can be of use to the Committee. The full report is available at the office of the Statewide Head Injury Program (SHIP) upon request. Our membership can provide you with an unending stream of heartbreaking stories that often start with the statement:"if only".

Respectfully submitted by

Arlene Korab — Inta Z. Hall

Arlene Korab
President

Inta Z. Hall
Public Policy Issues

(Also parents of young men who are head injured)

cc: Massachusetts Congressional Delegation

MOTOR VEHICLE MANUFACTURERS ASSOCIATION
of the United States, inc

1620 EYE STREET, N.W., SUITE 1000 • WASHINGTON, D.C. 20006 • AREA 202-775-2700
TLX NO. 705211 AUTOMAKERS WSH. UD • FAX NO. 202-775-2710

NEIL A. SPRINGER, *Chairman*
LEE A. IACOCCA, *Vice Chairman*
DONALD E. PETERSEN, *Treasurer*
ROGER B. SMITH, *Secretary*
THOMAS H. HANNA, *President and Chief Executive Officer*

October 27, 1989

The Honorable Daniel Patrick Moynihan, Chairman
Subcommittee on Water Resources, Transportation
and Infrastructure
Committee on Environment and Public Works
United States Senate
Room SH-508
Washington, DC 20510

Dear Senator Moynihan:

On October 17, 1989, the Subcommittee which you chair held a hearing on S. 1007, the "National Highway Fatality and Injury Reduction Act of 1989." Since the Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA) was not invited to testify at that hearing, we request that this letter, reflecting our support for the goals of S. 1007 which we had previously expressed to its principal sponsor, Senator Chafee (see attachment), and our endorsement of the testimony presented on behalf of Traffic Safety Now, Inc. (TSN), be included in the record of the Subcommittee's October 17 hearing.

As its President, Charles Spilman, indicated in his testimony at the hearing, TSN was founded five years ago by the domestic automobile manufacturer members of MVMA. Since that time, they and we have actively supported and participated in efforts to achieve TSN's principal objectives -- to educate the public on the benefits of safety belt use and to encourage states to enact strong safety belt use laws. Largely as a result of this five-year effort, 34 states and the District of Columbia now require the wearing of safety belts by vehicle occupants. Those laws cover 85 percent of the nation's population.

The injury-reduction and life-saving benefits of safety belt use are clear. The National Highway Traffic Safety Administration (NHTSA) estimates that belt use has prevented hundreds of thousands of injuries in the past five years, and saved 15,200 lives -- 10,300 of which are directly attributable to belt use laws. These traffic safety benefits of belt use represent untold billions of dollars of savings in insurance claims, health care costs, disability and welfare payments, and perhaps most importantly, the prevention of needless pain and suffering of traffic accident victims and their families.

MEMBERS:

CHRYSLER CORPORATION • FORD MOTOR COMPANY • GENERAL MOTORS CORPORATION • HONDA OF AMERICA MFG., INC.
NAVISTAR INTERNATIONAL TRANSPORTATION CORP. • PACCAR INC • VOLVO NORTH AMERICA CORPORATION

Despite these proven benefits, 16 states still do not have belt use laws, and the national safety belt usage rate is 47 percent. S. 1007 has the potential to encourage those remaining 16 states to enact effective belt use laws and to stimulate more intensive efforts in all states to significantly increase belt usage rates through public education and enforcement of belt use laws.

Sincerely,

Thomas H Hanna

Thomas H. Hanna

AE/sda
attachment
cc: Senator John H. Chafee

MOTOR VEHICLE MANUFACTURERS ASSOCIATION
of the United States, Inc.

1620 EYE STREET, N.W., SUITE 1000 • WASHINGTON, D.C. 20006 • AREA 202-775-2700
TLX NO. 705211 AUTOMAKERS WSH. UD

ROGER B. SMITH, *Chairman*
THOMAS H. HANNA, *President and Chief Executive Officer*

May 15, 1989

The Honorable John H. Chafee
United States Senate
Room 567 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Chafee:

On behalf of the Motor Vehicle Manufacturers Association of the U.S., Inc. (MVMA) and its member companies, I am writing to express support for the goal of your draft legislation which would require states to pass mandatory seat belt and motorcycle helmet use laws.

As you may already know, several domestic motor vehicle manufacturers (Chrysler, Ford, General Motors and Honda), this Association and the American Occupant Restraints Council established an organization in 1984, Traffic Safety Now, Inc. (TSN), for the purpose of reducing traffic crash injuries and deaths by fostering the increased use of safety belts. TSN's activities support the enactment of state safety belt use laws and educating the motoring public on the benefits of safety belt use.

Today, 33 states and the District of Columbia have enacted safety belt use laws, covering 85 percent of the nation's population. In addition, safety belt use has quadrupled since 1982 from 12 percent to 46 percent currently, and the fatality rate during the past two years was 2.4 per 100,000,000 miles driven, the lowest in American history. The National Highway Traffic Safety Administration (NHTSA) further estimates that safety-belt use has saved 15,200 lives and prevented or mitigated hundreds of thousands of injuries in the past five years. Of those lives saved, 10,300 were a direct result of state safety belt use laws.

Clearly, there are tremendous benefits to be gained from belt use laws, such that we must all work together, both the public and private sectors, to encourage all states to have belt use laws. As for motorcycle helmets, MVMA believes that mandating their use surely will reduce further the death and injury toll on our nation's roadways. In addition, the provisions in your draft bill regarding Federal-aid highway construction funding are consistent with MVMA's policy that, "Federal Highway Trust Funds should neither be withheld as a disincentive nor paid as an incentive in order to induce states to take actions not directly related to highway transportation."

MVMA looks forward to working with you and your staff as the bill progresses, and I hope you will let me know if I can be of any assistance to you.

Sincerely,

Thomas H Hanna
Thomas H. Hanna

THH/pdm

GOVERNMENT
RELATIONS OFFICE

MIC
MOTORCYCLE
INDUSTRY
COUNCIL, INC. 1235 Jefferson Davis Hwy., Suite 600, Arlington, VA 22202 • (703) 521-0444 • FAX (703) 521-1093

STATEMENT
OF THE
MOTORCYCLE INDUSTRY COUNCIL, INC.
TO THE
SUBCOMMITTEE ON WATER RESOURCES,
TRANSPORTATION AND INFRASTRUCTURE
OF THE
SENATE COMMITTEE ON ENVIRONMENT
AND PUBLIC WORKS

October 17, 1989

By: Melvin R. Stahl
Senior Vice President
Government Relations

Motorcycle Industry Council, Inc.
1235 Jefferson Davis Highway
Arlington, VA 22202

The Motorcycle Industry Council, Inc. (MIC) is a national not-for-profit trade association whose membership includes the manufacturers and distributors of motorcycles, motorcycle parts and accessories and members of allied and kindred trades. We are pleased to have been invited to give our comments on Senate Bill S. 1007, the "National Highway Fatality and Injury Reduction Act of 1989". We believe the intent of this measure, which seeks to save lives and reduce needless injuries, is a very straightforward and a laudable one, deserving of our support. Every year too many persons are killed or injured on our highways, regardless of whether an automobile, truck, motorcycle, bicycle or pedestrian is involved.

Senate Bill 1007 will attempt to mitigate this situation by requiring that States enact safety belt and motorcycle helmet laws. It will also provide Federal funding grants to the states for safety education and rider training and enforcement purposes. The Council agrees that the use of safety belts and safety helmets will save lives and help reduce serious injury. A number of states and the federal government agree as well.

There are however, those who stridently disagree with this position as of course is their right. Within the motorcycling community the issue of helmet wear mandated by law has become a very emotional one supporting vocal and organized opposition among the very persons who stand to benefit the most. It presents a formidable obstacle to achieving the high levels of helmet wear desired and necessary to lessen the burden of accidents.

One of the difficulties is the tremendous amount of mythology surrounding the helmet, that seeks to justify its not being worn. Myth is the only way to characterize such assertions as, helmets cause neck injury, helmets impair vision and hearing and helmets just don't do any good, among others. These of course are refuted time and time again by any responsible study that is conducted. We believe that helmets are effective and that they do make a difference. The scientific literature and better yet, common sense, support this view.

It is our sincere hope that helmet wear can be increased from the present estimated 40 - 50% to as close as possible to 100%. The pivotal issue, in opposition, resolves down to that of a personal decision to choose whether or not to wear a helmet and this is difficult to address. It is our view that these sorts of things preferably should not have to be legislated. However, if voluntary helmet wear can only achieve a 50% use rate, as evidence indicates, it then appears the only alternative to reaching the desired 90-95% usage level is through a mandatory requirement, which we know will produce these results. The merit of helmet wear should not be debated, only how it is prescribed.

It is in this area that the Council has misgivings, although not with the mandate but with the sanction. There certainly is recent precedent for returning to federal sanctions to force state motorcycle helmet statutes, however, we question if this is the best approach.

We ask the Committee to consider changing the philosophy of the sanction from that of a punitive one to one of reward. We believe it would be more effective and certainly less controversial to provide the states with grant funds to be used for the purposes stated, as an incentive "to enact and enforce", rather than to withdraw funds from other safety programs if they do not. The "conventional approach" has always been of concern on the face of it. It is very much like saying you have to clean up your water or we won't help with sewage treatment. To many it makes little sense to reduce safety efforts in one area as a consequence of not applying them in another. It also raises an issue that is not "the" issue; one of states rights and the presumption of federal blackmail. When these are interjected and experience that dictates that they always will be, it is severely distracting from the goals you are trying to achieve.

The Motorcycle Industry Council believes in safety and the safety of those who use our products. And we believe in helmet use. However, helmet use is only one component of a comprehensive approach to Motorcycle Safety. We need quality rider education programs, and improved motorcycle licensing practices and procedures. Safety awareness programs for both motorcyclists and operators of other vehicles with emphasis on "sharing the road", vehicle noticeability and vulnerability, will be of great benefit, as will enhanced law enforcement in all areas. If S. 1007 can help achieve these goals in a positive way, then we believe in it as well.

MOTORCYCLE SAFETY FOUNDATION

GOVERNMENT RELATIONS OFFICE
1235 JEFFERSON DAVIS HIGHWAY
SUITE 1410
ARLINGTON, VIRGINIA 22202
(703) 521-0444

Statement
of
Motorcycle Safety Foundation
Before the
Subcommittee on Water Resources,
Transportation and Infrastructure
of the
Senate Committee on Environment
and Public Works

October 17, 1989

By: Peter J. Fassnacht
Vice President,
Safety Programs

Motorcycle Safety Foundation
#2 Jenner St., Suite 150
Irvine, CA 92718

Mr. Chairman and Members of the Committee:

The Motorcycle Safety Foundation is a national, not-for-profit organization with a mission to attempt to improve the safety for motorcyclists on our nation's streets and highways. The Foundation is sponsored by the manufacturers and distributors of Honda, Yamaha, Kawasaki, Suzuki and BMW motorcycles. We have been vigorously developing and promoting comprehensive motorcycle safety programs since 1973.

The Motorcycle Safety Foundation and its member companies strongly recommend the wearing of a properly fitted, DOT approved helmet at all times when riding a motorcycle, scooter or moped. While the life-saving benefits of such laws are obvious, the Board of Trustees of the Motorcycle Safety Foundation believes any decision to mandate helmet usage should be made by the citizens and legislators of each state. However, we find no compelling safety reasons to oppose such laws if a legislature determines it is in the best interests of a state or the country.

A large number of myths are actively promoted in the struggle to prevent the enactment of mandatory helmet use laws. The Motorcycle Safety Foundation is deeply concerned for the unsuspecting motorcyclists who are misled by this information and who are not, as a result, wearing a potentially life-saving helmet. We appreciate your request to participate in the discussions on S. 1007 and address our concerns.

I would like to address and refute some of the more common myths.

"Helmets cause neck injuries."

Without a doubt, the actual cause of nearly all neck injuries is the crash itself, not helmets. Researchers have shown statistically that helmeted riders suffer fewer neck injuries than those without.

"Helmets impair hearing."

Helmets actually do effect a rider's ability to hear, but they do not prevent a rider from hearing. Wearing a properly fitted helmet can actually improve a rider's ability to hear. It does this by streamlining the head and ears which can substantially reduce wind noise, thereby allowing the rider to hear other sounds. And while a helmet will reduce the intensity of a given sound, it does this to all sounds. This is an important factor to understand.

In order for any sound to be heard, it must be louder (more intense) than the other sounds present. This is sometimes referred to as the signal-to-noise ratio. If the sound of an emergency vehicle, car horn or even the sound of a running automobile is louder than the sound of the rider's exhaust, wind noise and general traffic noise, then it will still be louder than other sounds when the rider is wearing a helmet.

A major flaw in the hearing argument is that researchers have not found that the ability to hear something provides the rider with sufficient notice to avoid a crash. Simply put, if you have to hear a hazard to avoid the crash, it's probably too late.

The dominant sense for gathering vital collision avoidance information is sight.

"Helmets restrict peripheral vision."

Helmets do not negatively affect a rider's ability to see. The Department of Transportation (DOT) standard FMVSS 218, to which all helmets legally sold in the United States for on-highway use must be certified, specifically requires a "window" that is larger than a person's normal peripheral visual field. The frames of eyeglasses and sunglasses intrude far more into the peripheral visual field than any properly fitted and certified helmet. Eyeglasses are not known to contribute to accident causation except perhaps in their absence.

It is also important to note that a helmet also does not prevent a rider from turning his or her head from side to side to observe traffic. This is a normal task expected of all motorists, drivers and riders alike.

Helmets provide an ideal mounting point for proper eye protection: either a visor or goggles. Eye protection is especially important to accident prevention because a rider is better able to see clearly, without tears from wind blast, or injury and distraction from dust, dirt and debris thrown up by other vehicles on the road.

"Helmets cause overheating."

Helmets can be uncomfortable when it's very hot, but a properly fitted helmet, especially one of the new ventilated designs, can also provide a higher level of comfort. Riders should also recognize that in certain climates it can, at times, be too hot to ride. But then its also too hot to walk, drive, work or be involved in most kinds of physical activity. A study on the subject showed that, while the surface of a helmet can get quite hot, the temperature inside a properly fitted helmet rarely rises more than one or two degrees above body temperatures. For the most part temperatures tend to stabilize at or near body temperature. At the other extreme, when its cold, a helmet can help prevent rapid heat loss, or hypothermia, the early stages of which are very similar to alcohol intoxication.

"I don't need a helmet. I'm an experienced rider."

Unfortunately, even experienced riders, some highly experienced, some highly renown, are involved in motorcycle crashes. Try as we might, we just are not able to accurately predict when or where a crash will occur. They can happen at any time. Some would say when you least expect it.

No matter what your views are on whether or not there should be laws requiring helmet use, the only way to be prepared for any potential crash is to wear proper protective equipment including a helmet every time you ride a motorcycle, scooter or moped.

We are also concerned that assertions have been made concerning Motorcycle Safety Foundation information on helmet law effectiveness. It has become common in the opposition to helmet use laws, to make claims that suggest that the Motorcycle Safety Foundation has done a "study" or has data that "proves" that states without helmet laws have lower fatality rates than those that do. Research reviewed by the Foundation does not support such a claim.

It seems that the data used to make this erroneous claim is derived from State reported fatality information summarized and published by the Foundation. This "raw data" is not comparable from State to State because of the vast differences in data collection methods, the wide variety of laws in force and the enormous variance in riding season, traffic density, vehicle population and roadway types that exist. Why this data is not comparable is illustrated in the fact that some States only report actual on-highway motorcycle accident fatalities in the "Motorcycle Fatality" category. Others, report everything from off-highway ATV's and motorcycles, through snowmobiles, golf carts and mopeds. Some of the data are estimates.

The Fatal Accident Reporting System files of The National Highway Traffic Safety Administration indicate that of the 4915 motorcyclists killed in 1987, 2614 or 53%, were known to not be wearing a helmet. In Mississippi, all riders killed, 100%, were not wearing helmets.

Only carefully controlled evaluations of comparable data can be used to determine the effect of helmet laws. When this type of study has been done, a very strong positive effect from helmet use and mandatory helmet use laws has been found. Mandatory use laws have been able to raise observed voluntary use rates of around 45 to 55 % to well over 90 %.

Helmet use can make a substantial contribution to motorcycle safety, but it is only one part of a more comprehensive approach advocated by the Foundation. We must continue efforts to provide high quality rider education programs; to have fair and objective motorcycle operator licensing practices; and to provide public awareness programs to help prevent accidents, and the injuries that result, from occurring.

Testimony Against S. 1007 - J. Naiman, San Diego, CA
Page 1

To the Members of the Committee on Environment and Public Works and Others Concerned Enough to Read or Hear This Testimony:

My name is Joe Naiman. I live in San Diego, the methamphetamine capitol of the world. Since the drug and gang problem varies from state to state, I feel that individual states should decide where law enforcement priorities should be placed. It is for this reason that I oppose S. 1007.

The compliance thresholds of S. 1007 would not only induce states to pass seat belt and helmet laws, but to enforce such laws more strictly than at present. This would divert law enforcement resources from other duties, including street crime. Some states can afford this without losing the fight against street crime. Others cannot.

S. 1007 is not about seat belts or motorcycle helmets. It is about choice. If seat belt and helmet laws are a good idea, then let the individual states pass those laws and enforce them according to their priorities. S. 1007 fails to take into account the different needs and resources of each individual state.

Supporters of S. 1007 point to medical costs of accident victims. Those are gross savings, not net savings; these victims make up a significant portion of organ donors, and the cost of hospitalizing organ non-recipients must be deducted from the gross medical savings. Once again, the states should be able to decide whether to accept the death and medical costs of the person who chose to ride in a motor vehicle, chose not to wear a seat belt or helmet, and possibly chose the conditions leading to the accident, or the death and medical costs of someone who did not choose to have a bad organ. It should be states which decide whether reducing traffic fatalities has a higher priority than saving organ victims, once again according to their individual needs and resources.

I urge the Committee to oppose S. 1007 so that the states will have the choice of prioritizing law enforcement and medical resources.

EMT

NATIONAL HEADQUARTERS: 9140 Ward Parkway • Kansas City, Missouri 64114
(816) 444-3500 FAX (816) 444-0330

TESTIMONY

Before the
United States Senate Committee on
Environment and Public Works

Hearing on S. 1007,
the "National Highway Fatality and Injury Reduction Act of 1989"

October 17, 1989

Submitted by:
the National Association of Emergency Medical Technicians

The National Association of Emergency Medical Technicians (NAEMT) appreciates the opportunity to submit testimony on Senator John Chafee's bill, S.1007, the "National Highway Fatality and Injury Reduction Act of 1989." The NAEMT strongly supports this legislation and applauds Senator Chafee's efforts to provide incentives for States to enact mandatory safety belt and motorcycle helmet laws.

The NAEMT, founded in 1975, is the professional association representing the approximately 500,000 emergency medical technicians (EMTs) and EMT-Paramedics in the country. EMTs and EMT-Paramedics are the first responders to most motor vehicle and motorcycle accidents. Our members deal with the devastating effects of these accidents on a daily basis and we are therefore very interested in any legislation that would lessen the severity of these accidents. We believe that enactment of S. 1007 would significantly reduce the number of fatalities and serious injuries caused by motor vehicle and motorcycle accidents and, as a result, reduce the medical costs which result from these accidents, much of which is paid by taxpayers.

The NAEMT supports both approaches in Senator Chafee's legislation -- the withholding of federal highway construction funds for States that do not enact safety belt and universal motorcycle helmet laws within three years, and the establishment of grants for education and enforcement activities for States that enact such laws. This two-pronged approach should prove to be very effective in persuading states to enact mandatory safety belt and motorcycle helmet laws.

One of NAEMT's Board of Governors members, Norman E. McSwain, Jr., M.D., has performed extensive research and has written several articles on the medical and financial consequences of motorcycle helmet usage versus nonusage. Dr. McSwain is a Professor of Surgery at Tulane University School of Medicine in New Orleans, Louisiana. We would like to share with you some of Dr. McSwain's findings.

In one article, the authors, Dr. McSwain and Anita Belles, report on the medical and financial impact of the repeal of the mandatory motorcycle helmet law in several states compared with the reinstatement of the mandatory motorcycle helmet law in Louisiana. As you are aware, since 1976, 35 states repealed or modified their motorcycle helmet laws and Louisiana reinstated their motorcycle helmet law in 1982. The authors studied the effects of these laws through 1987. They found that without motorcycle helmet legislation, the user rate dropped from 99% to

50%. With reinstatement, the user rate rose to more than 95%. The average hospital stay for helmeted riders was 5.8 days, while it was 11.8 days for non-helmeted riders. In Louisiana the fatality rate decreased by 62% and medical costs decreased by 48.8% between 1981 and 1987. The authors also found that, based on 1988 dollars, $93 million of additional medical care and rehabilitation expenses per year were due directly to non-use of helmets in the U.S. Forty to sixty per cent of non-helmeted riders have no insurance; therefore, $49 million of those additional expenses were absorbed by the public in the form of increased taxation and higher insurance costs. [1]

In another article, Dr. McSwain and Elaine Petrucelli, discuss the effects of repealing mandatory motorcycle helmet legislation in four states -- Colorado, Kansas, Oklahoma and South Dakota. The National Highway Traffic Safety Administration (NHTSA) contracted with these four states to conduct in-depth investigations of motorcycle crash injuries and the authors have summarized these findings. In three of the states - Colorado, Oklahoma and South Dakota, the pre- and post-repeal study periods were July-September 1976 and July-September 1977, respectively. The fourth state, Kansas, conducted its research during July-September 1975 and July-September 1976.

The article reports that significant decreases in helmet usage and significant increases in head injuries and deaths occurred in these states during the study periods. In Colorado, in less than a year after the helmet law was repealed, the fatal crash rate increased by 66% and the injury rate increased by 17%.

Kansas performed an in-depth analysis of the financial impact of repeal and found that there was a significant increase in the days of disability of the nonhelmeted rider versus the helmeted rider. The mean hospital cost in Kansas for nonhelmeted riders in 1977 was 189.3% higher than for helmeted riders. The proportion of injured who required hospitalization for helmeted versus nonhelmeted in 1977 and 1978 was 25.5/100 vs 41.6/100.

The McSwain/Petrucelli article concluded that:

- helmet usage is significantly less where use is not mandatory;
- helmets significantly decrease head injury death and disability;
- head injury death and disability increase when the laws are repealed;
- the crash rate is higher when helmets are not worn;

- the cost of medical care for a nonhelmeted rider is more than twice that of a helmeted rider; and,
- the amount of permanent disability is significantly increased when helmets are not worn. 2

Although the NAEMT strongly supports this legislation, we do have one concern and one suggestion:

- We are concerned with how mandatory seat belt and motorcycle helmet laws would be enforced. We applaud Senator Chafee for including in his legislation grants for enforcement activities and five million dollars for NHTSA to assist the States in these activities. However, enforcing these laws will be a difficult task. We suggest that a specific plan be developed for enforcing mandatory safety belt and motorcycle helmet laws.

- For any state that does not pass mandatory safety belt and motorcycle helmet laws, we suggest that the funds that are withheld from that state's highway construction fund be directed toward that state's emergency medical services (EMS) system. Specifically, we would like to see those funds be used for training and equipment needed to treat the type of injuries caused by the nonuse of safety belts and motorcycle helmets. As you know, when safety belts and motorcycle helmets are not used, the number of serious injuries and fatalities increases thus increasing the burden on EMS systems. We would like to see this money used to support the people who respond every day to tragedies on our nation's highways.

Finally, we would like to address the criticism that is most often made of mandatory safety belt and motorcycle helmet laws -- that such laws violate the rights of U.S. citizens. The NAEMT strongly supports all rights of U.S. citizens. However, in this case, we feel that the lack of mandatory safety belt and helmet laws violates the rights of the American taxpayer. In a perfect world where accidents did not occur, such laws would not be necessary and American citizens could choose whether to wear their seat belts or not. But, in reality, tragic accidents occur every day, and when Americans choose not to wear safety belts and motorcycle helmets, they harm not only themselves but the rest of us through the tremendous increase in health care costs and health insurance costs. A significant portion of that increase is borne by the American taxpayer.

Thank you again for the opportunity to submit testimony on this important piece of legislation.

References:

1. *Motorcycle Helmets - Medical Costs and the Law*. Norman E. McSwain, Jr., M.D., Tulane University School of Medicine; Anita Belles, MHH, Bexar County Hospital District.

2. *Medical Consequences of Motorcycle Helmet Nonusage*. Norman E. McSwain, Jr., M.D., and Elaine Petrucelli. **The Journal of Trauma,** Vol.24, No.3.

Rhode Island Chapter
of the
National Head Injury Foundation, Inc.

Independence Square - 500 Prospect Street - Pawtucket, RI 02860
(401) 725-2360

October 23, 1989

The Honorable John H. Chafee
U.S. Senate Committee on Environment & Public Works
United States Senate
Washington, D.C. 20510

Subject: Support for Senate Bill S1-007

Dear Senator Chafee:

The Rhode Island Chapter of the National Head Injury Foundation would like to express our support for the Senate Bill # S1-007 the you co-sponsored with Senator Moynihan requiring the use of safety belts and helmets.

Our organization is comprised of over 600 individuals whose lives have been affected either professionally or personally because of accidents which have changed the lives of someone we know or have treated. "Life is never the same after head injury" says it all.

Financially, medical expenses and life maintenance are staggering costs estimated by the National Head Injury Foundation in March of 1987 to be around $4.5 Million. Since many of the 16 to 35 years old that are injured are uninsured medically, this cost is being passed on to our tax payers. These individuals remain disabled and unproductive. The burden of their support is placed on the taxpayers, now and in the future. There are not many families in the United States which can afford to pay these costs out of pocket.

We have seen first hand, the emotional, and financial stress put on families as the result of motor vehicle accidents. We would like to see a reduction in the number of fatal and disabilitating accidents occurring on our nations highways. The use of seat belts in cars would reduce, if not eliminate, the number of injuries in minor accidents. The use of helmets could reduce the great number of head injuries on motorcycles and bicycles.

One of our goals is to educate the public to help prevent injuries. We hope that the Senators of this nation recognize the fact that if they are not convinced of the need for seat belts and helmets, they will have a difficult time educating the general public of the need. We are not trying to restrict anyone's freedom. We are trying to help them remain free of disabilities, that could restrict them from living their lives the way they want too.

Sincerely,

Frank Sparadeo emg.

Frank Sparadeo, Phd.
President

naon

NEWS RELEASE
National Association of Orthopaedic Nurses
North Woodbury Road, Box 56
Pitman, New Jersey 08071

FOR IMMEDIATE RELEASE

CONTACT: Marlene Diedrich
Executive Secretary
609-582-0111
Fax: 609-589-7463

June 2, 1989

RESOLUTION

Subject:	MANDATORY HELMET USAGE LEGISLATION
Introduced by:	The National Association of Orthopaedic Nurses
Whereas,	The incidence of survival in fatal crashes is approximately 20% for motorcycle riders as compared to 60% for passenger car occupants,
Whereas,	Head injuries are the leading cause of death in motorcycle accidents,
Whereas,	The use of motorcycle helmets has been proven to reduce fatalities and the severity of injuries,
Whereas,	Helmet usage is highest in states with mandatory helmet requirement for all,
Whereas,	The incidence of motorcycle accident fatality and injury is a major public health problem, affecting mainly young adult males,
Whereas,	Education in motorcycle use has shown no reduction in motorcycle accidents and their resulting injuries and fatalities,
Whereas,	Society is affected by the morbidity and mortality of motorcycle accident trauma, directly through emotional upheaval and financial burden by family and friends, or indirectly through loss of work productivity, increased insurance premiums, and taxpayer support with long term disability,
Resolved,	The National Association of Orthopaedic Nurses supports and recommends legislation by all states to require the use of helmets for all motorcycle riders in order to reduce the mortality and morbidity related to head, face, and neck injuries that occur from motorcycle accidents.

naon

NEWS RELEASE
National Association of Orthopaedic Nurses
North Woodbury Road, Box 56
Pitman, New Jersey 08071

FOR IMMEDIATE RELEASE

CONTACT: Marlene Diedrich
Executive Secretary
609-582-0111
Fax: 609-589-7463

March 10, 1989

At its February 13, 1989 meeting, the NAON Executive Board approved the following:

POSITION STATEMENT
MANDATORY SEAT BELT LEGISLATION

The National Association of Orthopaedic Nurses believes:

1. The use of safety belts in motor vehicles has been shown to reduce the number of fatalities, and the number and severity of injuries associated with motor vehicle accidents.
2. It is imperative that the most effective measures possible be taken to reduce the number of citizens who die or are injured in MVAs each year.
3. The use of safety belts in motor vehicles reduces the dramatic economic costs incurred as a result of motor vehicular trauma in terms of direct medical care costs, lost worker productivity, insurance premiums and the long-term effects of permanent disability.
4. Several incentive programs have been tried yet have not resulted in significantly reducing fatalities and injuries.
5. Compulsory safety belt laws have proven to be extremely effective in reducing the adverse personal and economic costs of MVAs and thus increasing motorist safety in the United States and abroad. Such legislation is cost-effective as exemplified by applying the cost savings (66.3%) by Orsay et al to the Department of Transportation's estimate of MVA induced expenditures for the year 1980 ($15.3 million). In this instance $10.1 billion would be saved per year by universal safety belt usage.

POSITIONS

The National Association of Orthopaedic Nurses supports the use of safety belt devices and legislation to mandate their use.

The National Association of Orthopaedic Nurses supports the expeditious passage of legislation requiring the mandatory usage of seatbelts as a means to reduce the morbidity and mortality associated with motor vehicle accidents.

Background

Data indicates that motor vehicle accidents (MVAs) are the leading cause of death in persons 5 to 34 years of age and the 7th leading cause of death in all age groups. The National Highway Traffic and Safety Administration (NHTSA) estimates for 1984 reflect 1.3 million years of potential life before age 65 were lost due to MVA related injuries.

In 1984 New York became the first state to legislate seat belt use for all citizens. In the first nine months after the new law was enforced, MVA fatalities decreased 17% to the lowest rate achieved in decades. The NHTSA reports a 11% reduction in serious injuries among belted front-seat passengers from 43% to 52% and a 43% decrease in fatalities. They further estimate that 1350 lives were saved in 1987 and over 8000 lives since 1983.

Traumatic injuries that occur as a result of MVAs have created a tremendous burden on the health care system and the taxpayers in this country. The NHTSA calculated the total economic loss to the United States in 1984 as exceeding $55 billion for expenditures incurred in treating MVA injuries, lost worker productivity (estimated at 11 million workdays in 1985) and costs associated with automobile and health insurance premiums and expenses. In a study reported in the Journal of the American Medical Association (December 1988) Orsay and colleagues found that over 19% of non-belt wearers were admitted to the hospital versus only 6.8% of those wearing belts; the two groups incurred hospital charges of $1583 versus $534 respectively. The researchers concluded that safety belt wearers had significant reductions in severity of injury (60.1%), hospital admissions (64.6%) and hospital costs (66.3%). These results underscore the effectiveness of seat belts in reducing severe injuries and medical costs of motorists resulting from MVAs.

The United States lags far behind all other developed nations in seat belt usage and mandatory legislation. Over 30 countries world-wide have compulsory safety belt laws.

Those opposing seat belt legislation do so on the premise that it violates their personal freedom of choice and right to privacy. However, in November 1988 the North Carolina Supreme Court upheld the state law mandating safety belt usage by finding that the greater good derived for the populace that results from the law is paramount to the infringement on personal rights such a law may incur. Others opposing such legislation postulate that usage should be left to individual discretion and that incentives less drastic than a legal mandate should be used to encourage belt usage. With the advent of the earliest Department of Transportation's position on seat belts came insurance incentives, mass-media campaigns, pledge cards, and public awareness programs. Each of these has met with varying rates of success, however collectively were not as successful at reducing fatalities and injuries as legislation.

NO SEAT BELT LAW FOR ADULTS
P.O. BOX 19495
PORTLAND, OREGON 19495

September 28, 1989

Committee on Environment and Public Works
Room SD-458
Dirksen Senate Office Building
Washington, D. C. 20510

Testimony in Opposition to S. 1007

Senator Chafee and Members of the Committee:

NO SEAT BELT LAW FOR ADULTS committee wishes to go on record as opposing S. 1007, regarding the reduction in apportionment of Federal-aid highway funds to certain States for other purposes.

S. 1007 is cited as the "National Highway Fatality and Injury Reduction Act of 1989". The title implies that the measure will magically reduce automobile injuries and fatalities. Legislative mandates will not curtail human suffering. Safety behind the wheel emanates from self worth, self awareness, courtesy, awareness of the capabilities of the automobile as well as respect for self and others, not through holding federal funds "hostage"! The measure ignores the injury/fatality potential from wearing seat belts. It further denies States from taking charge of their sovereign responsibilities and infringes on individual freedom of choice.

Withholding of federal highway funds from any state which does not mandate seat belt or helmet use is legislated blackmail. This decision belongs to states and their citizens. In 1988, the Oregon Legislature imposed a mandatory seat belt law which was referred to the voters. The legislation was resoundly defeated by a 56% to 44% margin.

The intent of S. 1007 is to circumvent the authority of selected states and impose financial reprisal. Citizens of this state labored for ten years to quell the legislative propensity to mandate seat belt use which **by law** is our prerogative. S. 1007 would take government **"of the people"** away from the people.

The $65 million dollar appropriation to impose federal control is money which could impact the national debt. It could more appropriately be dispersed toward the costs of education to reduce accidents. Under the administration of an "education President" the system could apply the money for greater return.

In Senator Chafee's press conference statement, statistics referring to" the severity of the highway problem in our country" would cause one to assume that it is directly related to use or non-use of seat belts or helmets. These statistics incite emotional responses and are vague, not well documented or pertinent and are self-serving. The selected polls which are quoted to validate the statement "we know that safety belt and helmet laws increase usage" cannot be substantiated.

We respectfully call the Committee's attention to an article written by John Semmens, Senior Policy Analyst, Arizona Department of Transportation and Dianne Kresich, Transportation Analyst, City of Mesa, Arizona. It is titled: "What If Everything We Know About Highway Safety Is Wrong?" An excerpt from their research paper:

> "Motor Vehicle safety is a sacred cow of public policy. For many any act that purports to enhance or promote safety is deemed warranted. The common presumption is that the attainment of safety is a mere matter of engineering technology or appropriate regulation. After all, improved safety is something that everyone supports, and since everyone really wants it, when individuals appear balky or indifferent to safety measures touted by experts, then safety should be imposed on them for their own good."
>
> "Little thought seems to go into the question of whether resorting to coercion can really achieve a safer environment. Not surprisingly, the concept of safety is rarely even defined. Much of the literature routinely equates safety with accident statistics, assuming that a decline in a targeted accident rate represents a safety improvement. ... Might the accident rates have declined anyway? Could some factor other than the assumed safety improvement have caused the change in accident statistics? Have accidents been reduced or merely shifted to other locations, times, activities or persons?

We urge the committee to vote to defeat Senate Bill S. 1007.

"They that can give up essential liberty to obtain a little temporary safety, deserve neither liberty not safety." Benjamin Franklin, 1759

Respectfully Submitted
Dorothy Gage
Dorothy Gage
Committee Chairperson

RHODE ISLAND MOTORCYCLE ASSOCIATION
P.O. BOX 10446 CRANSTON, RHODE ISLAND 02910
(401) 943-1535

October 6, 1989

U.S. Senate Committee on Environment
and Public Works
Room SD 458
567 Dirksen Senate Office Building
Washington, D.C. 20510

Senators:

I am writing you opposing Bill # S 1007. I have been a registered Lobbyist with the State of Rhode Island for the past ten years and a Motorcycle Instructor for the past four years. I have done this representing the Rhode Island Motorcycle Association in its efforts to maintain the higher levels of motorcycle training needed to handle these fine machines. I have worked very closely with our elected officials on Legislation that is not always favorable to the Motorcyclist of Rhode Island.

During the 1989 session of the General Assembly, there were five Bills introduced to reinstate the helmet law in one way or another in our State. Though there are a few that want to take away our freedom of choice, the majority do see the light that shines on our freedom. Freedom that this country was based on.

Such a Bill is not only taking away our freedom as Motorcyclists but, it takes away our freedom as a State to operate as we feel fit. Helmets, seat belts and education should be decided on a state level without pressure from the Federal Government.

The social burden theory has been stretched out of proportion when it comes to the motorcyclists of this country. Medical cost for cancer and heart disease far outweigh the cost of motorcyclist injuries. Let us put our efforts in the right direction rather than burden the motorcyclist of this country with such a law.

I thank you for your time in this matter and hope that you to will see the light that would dim if such a Bill became law.

Thank You,

Louis P. Petrucci Jr.
Government Relations

Oct. 5, 1989

Nadine Hamilton
Committee on Environment and Public Works
Room SD-458
Dirksen Senate Office Building
Washington, D.C. 20510

Dear Ms. Hamilton:

The enclosed is submitted as testimony on SB 1007.

Very truly yours,

Cliff Rhead
6090-B Pierce St.
Arvada, Colorado 80002

Cliff Rhead

Back in the 1950's the government came up with the idea that "every home should have a bomb shelter".

The government promoted the idea for a few years, claiming that many lives might be saved in the event of an air attack on America. Virtually no-one put in bomb shelters. No-one got killed in an air attack.

Eventually, someone in government cut the government's credibility losses short by deciding to discontinue the erroneous promotion.

In 1966 the government came up with the idea that every car should have a seat belt. Or an airbag. Or something.

This time the government pointed out that there really were lives being lost. And that seat belts or airbags really could prevent some of those fatalities.

Just as in the case of bomb shelters, the public asked themselves: Could a seat belt or airbag really save my life? Again the answer was no, and the public disregarded the government's idea.

The public made this judgement intuitively. If they had looked up the figures, they would have come to the same conclusion. There are 46,000 fatalities per year out of 160 million drivers. There is no real threat that I will be killed in an auto accident. And if every car had a seat belt or an airbag, DOT's figures (page 28986, Federal Register, July 17, 1984) show that this would only prevent 7,000 of those 46,000 fatalities. If I was one of those 46,000, seat belts or airbags in cars would almost surely fail to save my live.

Are'nt you glad you don't have to vote on a proposal by Sen. Chafee to withhold FHA loan guarantees in states where it is legal to live in a house without a bomb shelter? Someone bit the bullet and recognized that a "bomb shelter in every house" was a loser idea, sparing you the embarassment of deciding how you would vote on such a proposal.

Don't you wish somebody ten years ago would have bitten the bullet and gotten the government out of the business of promoting the loser idea of " a seat belt or an airbag in every car"? But they did'nt, and the government has now been out on a limb for twenty three years.

In fact, of course, one party did try to get government in a little bit from its position on the limb. At the fifteen year point, in 1981, the Reagan administration DOT cancelled the Carter administration's airbag requirement.

This decision was challenged in a lawsuit against DOT by the one party who has anything to gain by "seat belts and airbags in every car", the auto insurance industry represented by State Farm Mutual Automobile Insurance Company.

The supreme court upheld State Farm's suit to the extent of holding that DOT's decision was "arbitrary and capricious". The court did not decide whether automatic crash protection would or would not be required. Rather, it ordered the Reagan DOT to re-decide that question.

Amicus was not filed in that case by the 39,000 (out of 46,000) people who stand to die in auto crashes each year even if every car has airbags. Had it been filed it presumably would have read: For nearly a decade, the auto insurance industry waged the regulatory equivalent of war in favor of the airbag and lost - the inflatible restraint was proved not sufficiently effective for us.

The Reagan administration's response to the court's decision is of course well known. DOT moved the government further out on the limb from the loser position of "seat belts in every car" to the born loser position of "mandatory seat belt laws".

The administration certainly had another option at that time: Propose to congress that the government move back in on the limb. Such a proposal could have taken limited form such as congressional prohibition of an airbag requirement. Or it could have been the complete solution of the problem: propose to repeal the National Traffic and Motor Vehicle Safety Act of 1966.

The administration had the arguments to support any proposal along these lines.

- For eighteen years, 87% of the public had consistently not used the seat belts in their cars. 100% had not purchased airbags.
- Without using either, 99% of the public drove injury free every year.
- The public's disinclination towards seat belts and airbags is rooted in the public's intuitive knowledge of two facts: Driving is 99% safe and crash protection is only 10% effective in mitigating the 1% risk. These facts cannot change and therefore the public's attitude cannot change.

Why did'nt the Reagan Administration ask Congress to bite the bullet in 1984? Every American who has suffered through the acrimonious debate over "mandatory seat belt laws" for the last five years would like to know the answer to that question. The 85% of drivers who have not used seat belts for twenty three years would like to know the answer to that question.

The immediate answer is obvious: The administration knew that congress would not go along with such a proposal.

But why won't congress go along? The administration's decision not to make the proposal allowed congress to avoid answering a difficult question, but it left the public to fill in the answer from its own imagination, and these answers are not very flatering to congress.

Now the Chafee bill does what the Reagan administration didn't: Put the issue before congress. Is congress ready, after twenty three years, to evaluate the 1966 government idea of "a seat belt in every car"?

If I turn on McNeil/Lehrer and hear my senator reciting untruthful platitudes about seat belts "saving lives" and "reducing costs to society" I will know that my senator has not yet summoned the courage to face the issue.

Or if he opposes the bill, but offers only some platitude about "personal freedom", I will still know he is not ready to face the issue.

We will know who is ready to face the issue. They will speak openly and honestly about what they want.

1. I want to save lives.

   Good. Now are you willing to ask DOT to estimate how many lives seat belts have saved in the twenty three years that the government has made them the main emphasis of its safety campaign? 20,000 saved? 30,000 saved? During a period in which a million have died?

   How does this compare with the alternative of better roads? How many have been saved by the continued construction of the interstate highway system? How many have been saved by the Hazard Elimination Program?

   Doesn't it make more sense for you to save lives through a publicly popular program of better roads than a publicly rejected program of seat belts and airbags?

2. I want to help the auto industry avoid airbags.

   Good. Now have seat belts in cars prevented the threat of airbags? Have seat belt laws prevented the threat of airbags?

   Seat belts and airbags are the same thing: The publicly rejected concept of crash protection embodied in the National Traffic and Motor Vehicle Safety Act of 1966. You don't get rid of the threat of airbags until you get rid of the Act.

   You don't get rid of the act until you get a re-trial of the phony conviction of building "unsafe" cars. You must bring Nader's diiot book back into congress and hold his feet to the truth. The auto industry could have done this in 1969. They should do it now. You can't help them until they are ready to help themselves.

   But you sure can't help them with seat belts or seat belt laws. The implicit tenor of the Chafee bill is to get more belt laws passed and then get DOT to re-rescind automatic crash protection in a new rulemaking.

   This assumes that Massachussetts, Nebraska and Oregon voters won't re-repeal new seat belt laws. It assumes that voters in other states won't use the initiative to repeal belt laws in fesponse to Chafee's arrogant attitude. Most people's response to the initial passage of seat belt laws was to say "Gee, it violates freedom" and then deal with the problem by ignoring the law. This is a practical solution to the problem because the law is not enforced in most states.

   But the Chafee bill's provision for increased enforcement and more untruthful "education" is certain to provoke a more serious response from a public that does not use seat belts.

3. I want to help the auto insurance industry reduce its loss ratios.

   Good. Now seat belts and airbags haven't done any good for twenty three years, have they? And the public's non-use of seat belts and airbags isn't what caused these ratios to become unfavorable, is it?

   What caused these ratios to become unfavorable? Is it in the courts? Is it in the state regulatory process? Once you know what caused the problem, you can propose a solution that deals with the cause.

> Ginsburg's case for regulating automakers and drivers argues that "accident costs are imposed on others". But if an accident creates $15,000 in medical bills and the plaintiff asks for another $100,000 for "pain and suffering", how do we account for the $100,000? Wasn't the purpose of the $15,000 in medical treatment to relieve the pain and suffering? Can the plaintiff produce receipts to show he spent the addtional $100,000 on medical services to treat the pain and suffering? If not, isn't he taking money under false pretenses? Isn't the purpose of a court awarded money payment intended to compnsate the plaintiff for a money loss?
>
> If the $100,000 isn't spent on medical treatment then it can't be accounted for as part of the "accident cost". It must be accounted for as a cost arising from the incorrect operation of the court system.
>
> In the regulatory area, if state A's insurance commission won't permit an insurance company to charge enough premium to cover its costs but State B doesn't even regulate premiums, doesn't it seem easier to the insurance company in the short run to just charge too much in state B to make up for state A, and hope to make a better case in state A next year?
>
> And doesn't this same kind of thinking tempt insurors to say it's easier to ask for a government-mandated seat belt/airbag "safety" program to cut our claims a little bit than it is to ask lawyer dominated state legislatures to clean up the court system?
>
> The costs of the activity of motoring are not being externalized to society at large. With thanks to John Lovett, Ginsburg was really wrecked when he wrote that one.

Seat belts are offered as a way to achieve the above three goals, presumably forming the basis for a coalition. In fact, seat belts achieve none of these goals. And in each case there is an alternative that can achieve the goal.

Those who are honest enough to state plainly what they want and strong enough to propose better methods than seat belts will succeed. By dropping reliance on seat belts, you will gain public support.

The introduction of the Chafee bill gives congress the opportunity to drop the idea of "a seat belt in every car". The public dropped the idea twenty years ago. As usual, we have to wait a long time for you to catch up with us. As always, it's worth the wait when you finally do the right thing.

EFFECTS OF MOTORCYCLE HELMET USE ON DIFFUSE AXONAL BRAIN INJURY

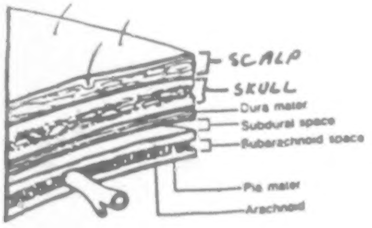
WRITTEN TESTIMONY OF GREGORY M. TROJAN, SUBMITTED TO: ENVIRONMENT AND PUBLIC WORKS COMMITTEE.
UNITED STATES SENATE, DIRKSEN BLDG. WASHINGTON D.C. 20510

The use of a motorcycle helmet does not preclude fatal brain injury due to the physical limitation of helmets to prevent coup/contrecoup type injuries. Diffuse axonal injury can occur regardless of helmet usage in the accident involved rider. One third of motorcycle fatalities are due to brain injury, helmet laws do not prevent, nor address the major causes of fatal injuries in accident involved motorcyclists.

BRAIN INJURY IN THE U.S.

While motorcycling and the controversy over helmet laws garners most of the attention concerning head injuries, motorcycling accounts for a very small portion of the total head injury occurring in the U.S. Within this country it is estimated that Ten Million head injuries occur each year. Of these ninety percent are minor. (1) There are approximately 500,000 brain injuries each year (2) which results in 70,000 deaths, with over 50% dieing before reaching a hospital. There are 70,000 disabling injuries and 10,000 severe spinal cord injuries each year. (3) In five selected studies on head injuries, the major cause of brain injury was transportation related. The second leading cause were falls with assault/gunshot wounds third. (4)(5) In these studies transportation related accidents account for approximately fifty percent of the total.

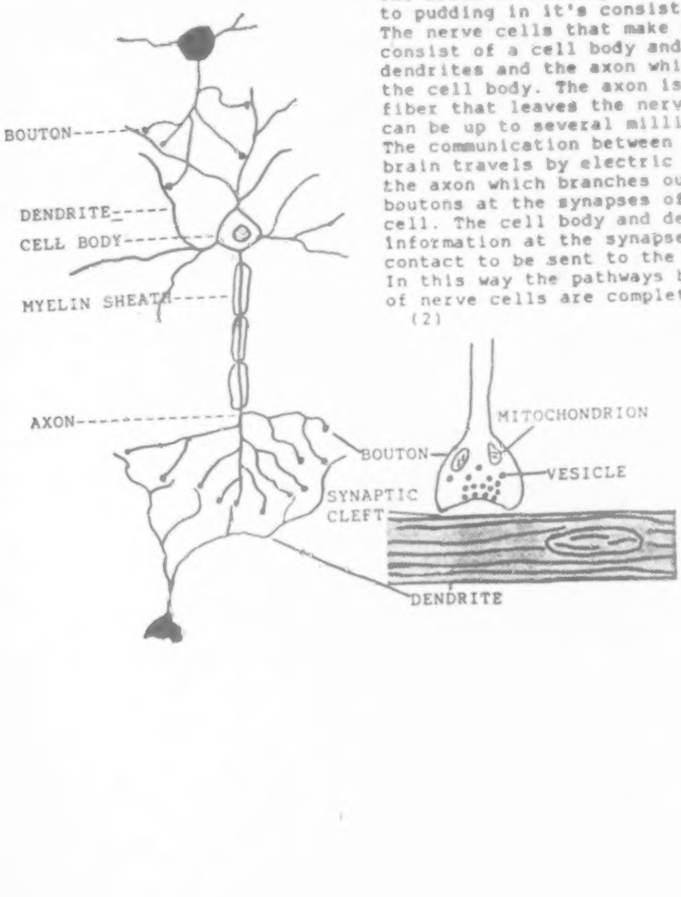
In terms of head injury, motorcyclists in two studies, Olmstead County Minn. (4) and North Central Virginia. (5) represented only 8% of the transportation related head injuries or 4% of the estimated total number of head injuries. Motor vehicles accidents accounted for 78% with pedestrian and bicyclists 14% in both studies. The fatal accident reporting system 1986 reports 1650 fatally injured riders wearing helmets with 2082 not using helmets and 788 were helmet use is undetermined. The preliminary FARS 1986 states that helmet usage is essentially the same for fatal injured and all riders. Two studies of motorcycle accidents showed head injury rates of 22% for all riders (6) and near 30% head injury rate for fatalities, both helmeted and non-helmeted riders (7)



ANATOMY OF THE BRAIN

To understand brain injuries one must have a fair working knowledge of the brains anatomy and how it reacts in a acceleration- deacceleration accident. The brain weighs on average three pounds and is so vascular that while it represents 1.2% of the bodies weight it receives 10% of the blood flow from the heart. The brain is enclosed with in the skull which is made up of 22 bones with 8 bones making up the cranium which encloses the brain. The base of the cranium is at the level of the eye and is very rough with a number of ridges. Within the cranium, adhering to the bone is a tough tissue covering called the Dura that envelops the brain. Under the dura in the subdural space is the cerebro-spinal fluid, this fluids main function appears to be to protect the brain from impact concussion. The brain "floats" in the cerebro-spinal fluid supported at the base by the spinal cord. The brain floating in the cerebro-spinal fluid can move within the cranium to a very limited degree. The space between the temporal bone and the brain is only one millimeter. Covering the brain is the arachnoid membrane a subarachnoid space and the pia matter. The brain it's self is divided into five main parts, two cerebral hemispheres; the inter-brain; the mid-brain; the pons Varolii and cerebellum; and the medulla oblongata. (8)

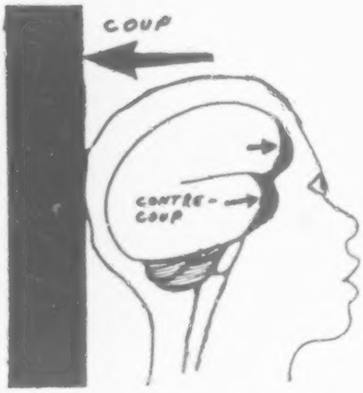
The brain is made up of a soft tissue similar to pudding in it's consistency.
The nerve cells that make up the brain consist of a cell body and processes called dendrites and the axon which branch off of the cell body. The axon is a singe nerve fiber that leaves the nerve cell body and can be up to several millimeter long.
The communication between cells of the brain travels by electric signals along the axon which branches out ending in boutons at the synapses of the next nerve cell. The cell body and dendrites receive information at the synapses or points of contact to be sent to the next cell.
In this way the pathways between billions of nerve cells are completed within the brain. (2)

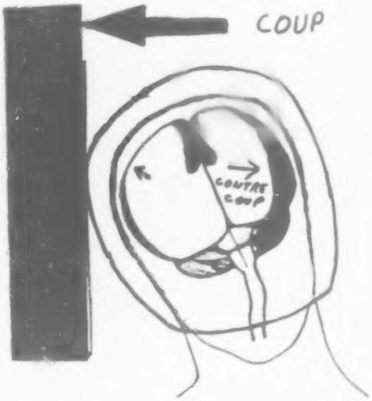


MECHANISM OF INJURY

There are two mechanisms of injury to the brain, contact and acceleration-deacceleration each causing different types of injuries. Contact injury results when an object strikes the head this results in local injury. When an object strikes the head the use of a hard hat or helmet dissipates the energy of impact by spreading it over a large area. This is an effective means of preventing head injury. It is important to note that the head and brain are not in motion. Acceleration-deacceleration injury occurs when the head and brain are placed in motion. When a person riding a motorcycle is involved in an collision they are most often thrown from the motorcycle. If the rides helmet impacts with an object the helmet and then the riders head stops in it's forward motion. The brain having it's own mass continues in motion until it strikes the inside of the skull it then rebounds striking the opposite side of the skull. This phenomena is called coup/contrecoup (pronounced Coo) and is used to describe any injury where the brain impacts with the inside of the skull. This type of injury can result in anything from mild concussion to fatal diffuse axonal injury. A helmet is physically incapable of slowing the head and hence the brain in an impact over sufficient time and distance, there for a helmet can not prevent coup/contrecoup type injuries from occurring

(3)

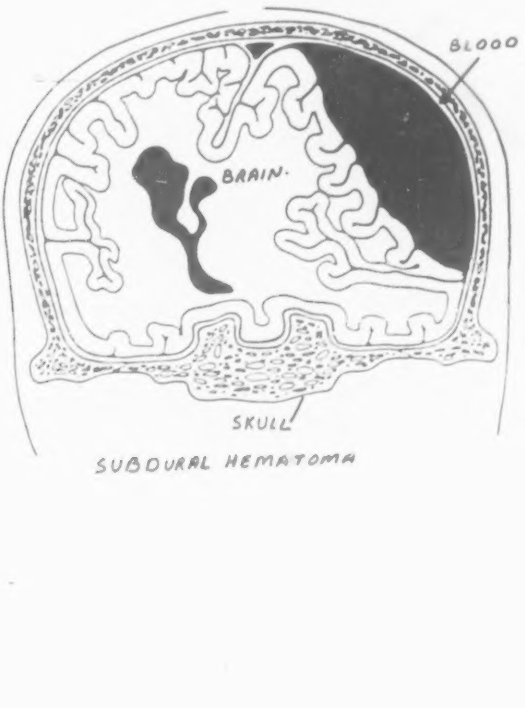




TYPES OF INJURIES

The majority of brain injuries are closed injuries, that is there is no open wound to the brain. Closed injury can be classified into two types. Focal injury is the type most often seen with assaults or a blow to the head. This is where the damage to the brain is localized in one part of the brain as in subdural hematomas and bruising of the brain. Studies have shown 72% of acute subdural hematomas are caused by falls or assaults, only 24% are caused in transportation accidents. (10) Diffuse brain injury is wide spread through out the brain and is attributed mainly to motorvehicle accidents.. The resulting injury can include both focal and diffuse types of injury. Diffuse axon injury (DAI) is the most common type of injury, seen in one-half of severely injured patients. Diffuse axonal injury occurs at the moment of impact, resulting in increased intracranial and intracerebral pressure along with sear, tensile and compression forces. (9) The shearing force causes tearing of the axons and of small blood vessels in the brain. Basal skull fracture are not uncommon with this type of injury. Brawley and Kelly noted 24% of 1250 head injuries had basal skull fractures.(11) It is important to note that full face helmets have been shown to induce basal skull fractures in motorcyclists. (12) An blow to the chin bar of a full face helmet transfers the impact energy to the retension system. The force allied is then transferred to the base of the skull, it's weakest portion

(4)



SUBDURAL HEMATOMA

CONCLUSIONS

While the use of helmets by motorcyclists has been promoted as a means of "saving" lives, the mechanisms of brain injury were not well understood by their promoters. The perception by the general public is that helmets have a major effect on brain injuries. They have seen helmets or hard hats used effectively in industry, the military and sports. These uses represent contact type injury where the brain is basically stationary, once the brain is in motion an entirely different set of circumstances apply. The occurrence of serious brain injuries have been noted in falls as small as ten feet, due to movement of the brain inside the skull. The perception that motorcyclists account for "most" of the head injuries is completely off base and without merit. The laws of physics apply to the brain as with any object in motion. Once an object is in motion it tends to stay in motion until acted upon by an outside force. While most think of the brain as an attached part of the body it is floating within the skull this accounts for coup/contrecoup affect in collisions. Attempting to slow the brain with a helmet over sufficient time and distance once a collision occurs is a physical impossible task.

With 1650 fatalities of helmeted riders in 1986, one has to question what affect helmets are actual having in fatal accidents. The major failure by those charged with improving highway safety is that helmet, laws do not address two-thirds of the fatal injuries incurred by accident involved motorcyclists or with the brain injury still occurring with helmet use. The systematic approach to the reduction of accidents through self funded motorcycle rider education programs is obviously the most effective means of reducing fatalities. The FARS report for 1987 shows a drop in fatalities of 11.7%, this occurred with out a change in state helmet laws for the period. There were however 30 state with rider education programs. An article in American Motorcyclist noted that the fatality rate in states with rider education and no helmet law was 2.56 per 100 accidents. The rate in states without rider education was 3.12 per 100 accidents (1986 statistics) The only logical and effective means of preventing brain injuries is in preventing the collisions from occurring. This approach has been effective in many states. Ohio has see a 47% drop in car vs. motorcycle accidents, and a 24% drop in fatalities since the start of a motorcycle awareness program and rider education.

The coup/contrecoup effect explains the brain injury occurring regardless of helmet usage and points to the need for more study to be done in this area. While studies are being done on head injury in states without helmet laws, there has been no study of the effects helmets have in states with helmet laws. There will soon be a national data bank for head injury in the U.S. that will provide a better understanding of the problem.

Gregory M. Trojan EMT-P ACLS, BTLS. MSF Instructor is a paramedic with fifteen years of experience, who brings together a knowledge of motorcycling, emergency medical care, mechanism of injury, and a study of head injury. As a motorcyclists of nineteen years and a paramedic he has been very aware of motorcycle accidents and the lack of information available. The study of head injury started after caring for a motorcyclists hit by a drunk driver. That motorcyclist suffered a fatal brain injury while wearing a helmet.

REFERENCES

1. Long CJ, Novack TA,:Postconcussion Symptoms after head trauma. Southern Medical J. 79:728=732 1986
2. Gress Daryl R.,MD Emergency Care Quarterly/Aug. 1989;5(2):15-23
3. Prevent. Dr. M. J. Mervart Neurosurgeon, President. Newsrelease Sring 1989
4. Annergers JF, Grabow JD, KurtlandLT,et al: The incidence,cause,and secular trends in head injury in Olmstead County, Minnesota, 1935-1974. Neurology 30:912-919, 1980
5. Jagger J, Levine J, Jane J, et al: Epidemiologic features of head injury in a predominantly rural population. J. Trauma 24:40-44, 1984
6. Motorcycle Accident Factors Study. National Highway Traffic Safety Administration. Research and Development National Center for Statistics And Analysis. Sept. 1980. U.S. Government Printirg Office:1981-341-428/515
7. Wisconsin Motorcycle Helmet Law "(A Before and After Study of Helmet Law Repeal)" Office of Information Wisconsin Dept. of Transportation. P.O. Box 7910 Madison, Wisconsin 53707 1980
8. Gray's Anatomy. Gray, Henry F.R.S., 1977 Library of Congress:76-52804
9. Gennarel . TA, Thibault LE: Biomechanics of acute subdural hematoma. J. Trauma 22:680-686, 1982.
10. Dawson SL, Hirsh CS, Lucas FV, Sebek BA: The contrecoup phenomenon; reappraisl of a classic problem. Hum Pathol 11:155-166, 1980
11. Brawley BW, Kelly WA: Treatment of basal skull fractures with and without cerebrospinal fluid fistulae. J. Neurosurg. 26:57-61, 1967.
12. Cooter RD, David DJ, McLean AJ, Simpson DA; Helmet-induced skull base fractur in a motorcyclist. Lancet 8577:84-85 1988

For further information: Gregory M. Trojan
4116 Woburn Av.
Cleveland, Oh 44109